PROPOSED GRAVEL MINE ON A PORTION OF PORTION 4 OF THE REMAINING EXTENT OF THE FARM BRAKFONTEIN NO 310 IR MAGISTERIAL DISTRICT OF HIGHVELD RIDGE OF MPUMALANGA PROVINCE.

FINAL BASIC ASSESSMENT REPORT

AUGUST 2021

REFERENCE NUMBER: MP 30/5/1/1/3/12554 MP

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EXECUTIVE SUMMARY

Inzalo Crushing and Aggregates (Pty) Ltd (hereinafter referred to as “the Applicant”), applied for environmental authorisation (EA) and a mining permit for the mining of aggregate stone / gravel (dolerite) (hereinafter referred to as “gravel”) on a portion of Portion 4 of the Remaining Extent of the Farm Brakfontein No 310 IR magisterial district of Highveld Ridge of Mpumalanga Province. The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries.

The proposed mining area is approximately 4.9 ha in extent and the applicant, intents to win material from the area for at least 2 years with a possible extension of another 3 years. The aggregate to be removed from the quarry will be used for the construction industry in the vicinity. The proposed quarry will therefore contribute to the upgrading / maintenance of road infrastructure and building contracts in and around the Leandra area.

The proposed project triggers listed activities in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) and the Environmental Impact Assessment Regulations 2014 (as amended 2017) and therefore requires an environmental impact assessment (basic assessment process) that assess project specific environmental impacts and alternatives, consider public input, and propose mitigation measures, to ultimately culminate in an environmental management programme that informs the competent authority (Department of Mineral Resources and Energy) when considering the environmental authorisation. This report, the Final Basic Assessment Report, forms part of the departmental requirements, and presents the first report of the EIA process.

Site Alternative 1 (Preferred and Only Site Alternative):

Site Alternative 1 (S1) (Preferred Alternative and only site alternative): The Applicant, applied for a mining permit for the mining of aggregate / gravel, 4.9 ha on a portion of Portion 4 of the Remaining Extent of the Farm Brakfontein No 310 IR magisterial district of Highveld Ridge of Mpumalanga Province. The proposed mining footprint will be 4.9 ha and will be developed over a disturbed area of the farm previously used for mining.

Site Alternative 1, which entails the mining of an area previously used for the mining of gravel from and existing quarry, was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the preferred site alternative.

Site Alternative 2:

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. The earmarked area is also a greenfield site that will have a higher visual impact to be disturbed for the quarry to be established. Site alternative 1, was deemed the only site alternative as this is an area previously used for the mining of gravel from and existing quarry, was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the preferred site alternative.

No-go Alternative:

The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. The aggregate / gravel to be mined will be sold to the building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented the Applicant could not utilise the mineral resource on this property and the construction industry of Leandra will not benefit from diversification of gravel sources which will escalating product costs.

Public Participation Process:

During the initial public participation process the stakeholders and I&AP's were informed of the project by means of background information documents that were sent directly to the contact persons. An advertisement that was placed in the Ridge Times on 2 April 2021, and on-site notices were placed at conspicuous places (Govan Mbeki Local Municipality building en Leandra Quarry boundary fence). A 30-days commenting period was allowed which expired on 4 May 2021. In accordance with the timeframes stipulated in the EIA Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) the Draft Basic Assessment Report was compiled and distributed for comment and perusal to the I&AP's and stakeholders. A 30-day commenting period, ended 1 July 2021, was allowed for perusal of the documentation and submission of comments. The comments received on the DBAR was incorporated into this Final Basic Assessment Report (FBAR) to be submitted for decision making to DMRE.

Basic Assessment Report:

The basic assessment report identifies the potential positive and negative impacts that the proposed activity will have on the environment and the community as well as the aspects that may impact on the socio-economic conditions of directly affected persons, and proposes possible mitigation measure that could be applied to modify / remedy / control / stop the identified impacts.

The key finding of the environmental impact assessment entail the following:

Topography:

- The natural topography of the area surrounding the proposed aggregate / gravel mine is best described as gently to moderately undulating landscape on the Highveld plateau. Altitude 1 420–1 760. The figure below shows the elevation loss from the proposed mining footprint to the town of Leandra to be 0 m over 500 m.

Visual Characteristics:

- The viewshed analysis showed that the visual impact of the proposed aggregate mining operation will be of low significance. The project area is located in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the existing access road to the quarry which is currently in extremely bad visual state.

- Ground-truthing showed that the proposed footprint of the mining area is extremely disturbed. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the visual characteristics in general is only deemed to improve.

Air and Noise Quality:

- The wind patterns in Leandra are somewhat influenced by seasonal variations. According to worldweatheronline.com strong winds blow between August and December with an average of 12kmph and slowly decreases 7.5kmph between January and June. The ambient noise levels of the surrounding area are low with the noise levels of the greater surrounding area are low representing that of a rural area, with the noise levels of the study area (immediate surroundings) impacted by farming operations and the R50.

- The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use. The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area.

Geology and Soil:

- The geology of the study area comprises mostly Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types.

Hydrology:

- The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). The proposed mining footprint extends into an area that has previously been used for mining, and all activities will take place by extending an existing mining area away from (in the opposite direction) of water bodies. No activities will take place within 50 m of a water body or the rechanneling of a water body. Any water required for the implementation of the project will be bought from a registered source and transported to on siteAny water required for the implementation of the project will be bought from a registered source and transported to on site.

Mining, Biodiversity and Groundcover:

- The project area is located in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the existing access road to the quarry, making use of the existing internal/haul roads to access the material within the mining area.

- Ground-truthing showed that the proposed footprint of the mining area is extremely disturbed. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.

Fauna and Flora:

- According to Mucina and Rutherford (2012) the expansion area extends over a gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus, Eragrostis racemosa, Heteropogon contortus* and *Tristachya leucothrix*. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover. Only a handful of

patches statutorily conserved (Waldrift, Krugersdorp, Leeuwkuil, Suikerbosrand, Rolfe's Pan Nature Reserves) or privately conserved (Johanna Jacobs, Tweefontein, Gert Jacobs, Nikolaas and Avalon Nature Reserves, Heidelberg Natural Heritage Site).

Cultural and Heritage Environment:

- According to the Heritage Impact Assessment (see Appendix M), The study area is altered due to the development of a golf course, roads and an adjacent quarry, that would have obliterated surface indicators of heritage resources if any ever occurred in the study area. The study area is flat without focal points like natural pans or rocky outcrops that would have attracted human occupation in antiquity and is considered to be of low heritage potential. This was confirmed during the site visit when no heritage resources of significance were noted.

- The impact of the proposed project on heritage resources low and it is recommended that the proposed project can commence on the condition that the recommendations (Section 10.1 see Appendix M) are implemented as part of the EMPr and based on approval from SAHRA the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases
  Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.
  If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository.

Site Specific Infrastructure:

- There following existing infrastructure located within 500 m of the proposed mining area includes:

  - An existing Asphalt Plant is located 2km south west of the site.
  - An existing quarry immediately extending into the application area.
  - The R50 – 520 m towards the east of the site.

During the environmental impact assessment process the feasibility of the proposed site was assessed to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant a site or project alternative. The outcome of the assessment showed that should the

mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing.

Environmental Management Programme (EMPR)

The EMPR provides a description of the impact management outcomes and closure objectives. It presents the impacts to be mitigated in their respective phases as well as stipulates the mitigation measures to be applied on site.

The financial provision amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of R 381 917.81.

LIST OF ABBREVIATIONS

BID	Background Information Document
BGIS	Biodiversity GIS
CARA	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)
CBA	Critical Biodiversity Area
FBAR	Final Basic Assessment Report
DEDEAT	Department of Economic Development, Environmental Affairs and Tourism
DMRE	Department of Mineral and Resources and Energy
DoT	Department of Transport
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIA Regulations	Environmental Impact Assessment Regulations, 2014 (as amended 2017)
EISC	Ecological Importance and Sensitivity Category
EMPR	Environmental Management Programme
FBAR	Final Basic Assessment Report
FEL	Front-end-loader
GDP	Gross Domestic Product
GNR	Government Notice
I&AP's	Interested and Affected Parties
MBP	Mpumalanga Biodiversity Plan
MHSA	Mine Health and Safety Act, 1996 (Act No. 29 of 1996)
MP	Mining Permit

MPRDA	Minerals and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA	National Environmental Management: Air Quality Control Act, 2004 (Act No. 39 of 2004)
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM:WA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
NFEPA	National Freshwater Ecosystem Priority Areas
NHRA	National Heritage Resources Act, 1999 (Act No 25 of 1999)
NRTA	National Road Traffic Act, 1996 (Act No. 93 of 1996)
NWA	National Water Act, 1998 (Act No. 36 of 1998)
PCB's	Polychlorinated Biphenyl
PCO	Pest Control Officer
PPE	Personal Protective Equipment
PSM	Palaeontological Sensitivity Map
RA	Risk Assessment
REC	Recommended Ecological Category
S1	Site Alternative 1
SAHRA	South African Heritage Resources Agency
SAHRIS	South African Heritage Resources Information System
SAMBF	South African Mining and Biodiversity Forum
USBM	US Bureau of Mines
WMA	Water Management Area
WULA	Water Use Licence Application

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BASIC ASSESSMENT REPORT

And

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

SUBMITTED FOR ENVIRONMENTAL AUTHORIZATION IN TERMS OF THE NATIONAL ENVIRONMENTAL ACT, 1998 AND THE NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT, 2008 IN RESPECT OF LISTED ACTIVITIES THAT HAVE BEEN TRIGGERED BY APPLICATIONS IN TERMS OF THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002 (MPRDA) (AS AMENDED).

NAME OF APPLICANT:	Inzalo Crushing and Aggregates (Pty) Ltd
TEL NO:	Tel: 011 966 4300
FAX NO:	N/A
POSTAL ADDRESS:	PO Box 26730 East Rand,1462
PHYSICAL ADDRESS:	93&94 Maple Street, Pomona, Kempton Park
FILE REFERENCE NUMBER SAMRAD:	MP 30/5/1/1/3/12554 MP

IMPORTANT NOTICE

In terms of the Mineral and Petroleum Resources Development Act (Act 29 of 2002) as amended), the Minister must grant a prospecting or mining right if among others the mining "will not result in unacceptable pollution, ecological degradation or damage to the environment".

Unless an Environmental Authorisation can be granted following the evaluation of an Environmental Impact Assessment and an Environmental Management Programme report in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA), it can be concluded that the said activities will not result in unacceptable pollution, ecological degradation or damage to the environment.

In terms of section 16(3)(b) of the EIA Regulations, 2014, any report submitted as part of an application must be prepared in a format that may be determined by the Competent Authority and in terms of section 17(1)(c) the competent Authority must check whether the application has taken into account any minimum requirements applicable or instructions or guidance provided by the competent authority to the submission of applications.

It is therefore an instruction that the prescribed reports required in respect of applications for an environmental authorisation for listed activities triggered by an application for a right or a permit are submitted in the exact format of, and provide all the information required in terms of, this template. Furthermore, please be advised that failure to submit the information required in the format provided in this template will be regarded as a failure to meet the requirements of the Regulation and will lead to the Environmental Authorisation being refused.

It is furthermore an instruction that the Environmental Assessment Practitioner must process and interpret his/her research and analysis and use the findings thereof to compile the information required herein. (Unprocessed supporting information may be attached as appendices). The EAP must ensure that the information required is placed correctly in the relevant sections of the Report, in the order, and under the provided headings as set out below, and ensure that the report is not cluttered with un-interpreted information and that it unambiguously represents the interpretation of the applicant.

OBJECTIVE OF THE BASIC ASSESSMENT PROCESS

The objective of the basic assessment process is to, through a consultative process–

(a) determine the policy and legislative context within which the proposed activity is located and how the activity complies with and responds to the policy and legislative context;

(b) identify the alternatives considered, including the activity, location, and technology alternatives;

(c) describe the need and desirability of the proposed alternatives,

(d) through the undertaking of an impact and risk assessment process inclusive of cumulative impacts which focused on determining the geographical, physical, biological, social, economic, heritage, and cultural sensitivity of the sites and locations within sites and the risk of impact of the proposed activity and technology alternatives on these aspects to determine:

  (i) the nature, signification, consequence, extent, duration, and probability of the impacts occurring to; and

  (ii) the degree to which these impacts –

    (aa) can be reversed;

    (bb) may cause irreplaceable loss of resources; and

    (cc) can be managed, avoided or mitigated;

(e) through a ranking of the site sensitivities and possible impacts the activity and technology alternatives will impose on the sites and location identified through the life of the activity to –

  (i) identify and motivate a preferred site, activity and technology alternative;

  (ii) identify suitable measures to manage, avoid or mitigate identified impacts; and

  (iii) identify residual risks that need to be managed and monitored.

PART A

SCOPE OF ASSESSMENT AND BASIC ASSESSMENT REPORT

1. CONTACT PERSON AND CORRESPONDENCE ADDRESS

a) Details of: Greenmined Environmental

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) the proponent must appoint an independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) of any activities regulated in terms of the aforementioned Act. Inzalo Crushing and Aggregates (Pty) Ltd appointed Greenmined Environmental to undertake the study needed. Greenmined Environmental has no vested interest in Inzalo Crushing and Aggregates (Pty) Ltd or the proposed project and declares its independence as required by the Environmental Impact Assessment Regulations, 2014 (as amended April 2017) (EIA Regulations).

i) Details of the EAP

Name of the Practitioner:	Mrs Sonette Smit (Senior Environmental Specialist)
Tel No.:	021 851 2673
Fax No.:	086 546 0579
E-mail address:	sonette.s@greenmined.co.za

ii) Expertise of the EAP.

(1) The qualifications of the EAP
(with evidence).

Mrs. S Smit has fourteen years of experience in environmental legal compliance audits, (GIS) geographic information system, mining right and permit applications and applications for environmental authorisations & Water use applications.. Please find full CV attached in Appendix K.

(2) Summary of the EAP's past experience.
(In carrying out the Environmental Impact Assessment Procedure)

Sonette Smit is an Environmental Consultant with 14 years' experience in the environmental sector. She specialized the last 8 years in the mining sector where she conducted the mining related report and programs. She has also been involved in a number of other environmental and water use application projects

where she compiled environmental management plans, environmental impact assessments, environmental audits, IWULA’s/IWWMP’s.

b) Location of the overall Activity.

Table 1: Location of the proposed project.

Farm Name:	A portion of portion 4 of the remaining extent of the farm Brakfontein No 310 IR magisterial district of Highveld Ridge of Mpumalanga Province
Application area (Ha)	4.9 ha
Magisterial district:	Highveld Ridge
Distance and direction from the nearest town	±650m north west of Leandra of the R50 Travelling north from Leandra, the site is located just off the R50 located on the first gravel road turning left approximately 70m from the last buildings when leaving the town.
21 digit Surveyor General Code for each farm portion	T0IR00000000031000004

c) Locality map

(show nearest town, scale not smaller than 1:250000).

The requested map is attached as Appendix B.

Figure 1: Satellite view of the proposed mining permit area (orange polygon) of Inzalo Crushing and Aggregates (Pty) Ltd (image obtained from Google Earth).

d) Description of the scope of the proposed overall activity.

Provide a plan drawn to a scale acceptable to the competent authority but not less than 1:10 000 that shows the location, and area (hectares) of all aforesaid main and listed activities, and infrastructure to be placed on site

Inzalo Crushing and Aggregates (Pty) Ltd (hereinafter referred to as "the Applicant"), applied for environmental authorisation (EA) and a mining permit for the mining of gravel on a portion of Portion 4 of the Remaining Extent of the farm Brakfontein No 310 IR magisterial district of Highveld Ridge of Mpumalanga Province.

The proposed activity will entail the extension of the existing quarry pit (4.9 ha) in an area that has been mined for numerous years. The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries.

The proposed mining area is approximately 4.9 ha in extent and the applicant, intents to win material from the area for at least 2 years with a possible extension of another 3 years.

The aggregate to be removed from the quarry will be used for construction industry in the vicinity. The proposed quarry will therefore contribute to the upgrading / maintenance of road infrastructure and building contracts in and around the Leandra area.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Blasting
- Excavating;
- Crushing;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

The mining site will contain the following:

- Excavating equipment;
- Earth moving equipment;
- Mobile crushing and screening plants;
- Access Roads;
- Site office (Container);
- Site vehicles;
- Parking area for visitors and site vehicles;
- Weighbridge;
- Ablution facilities (Chemical toilet).

See attached as Appendix C a copy of the site activities map for the proposed project.

i) Listed and specified activities

Table 2: Listed and specified activities triggered by the associated mining activities

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity** Ha or m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected	**APPLICABLE LISTING NOTICE** (GNR 324, GNR 325, GNR 326 OR GNR 327)
Demarcation of site with visible beacons.	4.9 ha	N/A	Not listed
Site establishment	±4.9 ha	X	GNR 327 LN 1 Activity 27
• <u>GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 27:</u> *The clearance of an area of 1 hectares or more, but less than 20 hectares of* *indigenous vegetation, except where such clearance of indigenous vegetation is* *required for—* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.*			
Mining of gravel / aggregate	±4.9 ha	X	GNR 327 LN 1 Activity 21, 28.
• <u>GNR Environmental Impact Assessment Regulations 327 Listing Notice 1 of 2017 Activity 21:</u> *Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —* *(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource [,]; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]* *(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;* • *but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies* • <u>GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28:</u> *Residential, mixed, retail, commercial, industrial or institutional developments where*			

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity** Ha or m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected	**APPLICABLE LISTING NOTICE** (GNR 324, GNR 325, GNR 326 OR GNR 327)
such land was used for agriculture, game farming, equestrian purposes or afforestation *on or after 01 April 1998 and where such development:* *(i) will occur inside an urban area, where the total land to be developed is bigger* *than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is bigger* *than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail,* *commercial, industrial or institutional purposes.*			
Crushing, screening, stockpiling and transporting material from site.	±1 ha	X	GNR 327 LN 1 Activity 21, 28.

- GNR Environmental Impact Assessment Regulations 327 Listing Notice 1 of 2017 Activity 21:

Any activity including the operation of that activity which requires a mining permit in terms of section 27 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002), including —

(a) associated infrastructure, structures and earthworks, directly related to the extraction of a mineral resource [,]; or [including activities for which an exemption has been issued in terms of section 106 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002)]

(b) the primary processing of a mineral resource including winning, extraction, classifying, concentrating, crushing, screening or washing;

but excluding the secondary processing of a mineral resource, including the smelting, beneficiation, reduction, refining, calcining or gasification of the mineral resource in which case activity 6 in Listing Notice 2 applies

- GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2014 Activity 28:

Residential, mixed, retail, commercial, industrial or institutional developments where

such land was used for agriculture, game farming, equestrian purposes or afforestation

on or after 01 April 1998 and where such development:

(i) will occur inside an urban area, where the total land to be developed is bigger

NAME OF ACTIVITY (E.g. For prospecting – drill site, site camp, ablution facilities, accommodation, equipment storage, sample storage, site office, access route etc... etc... etc E.g. for mining – excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc...etc.)	**Aerial extent of the activity** Ha or m^2	**LISTED ACTIVITY** Mark with an X where applicable or affected	**APPLICABLE LISTING NOTICE** (GNR 324, GNR 325, GNR 326 OR GNR 327)
than 5 hectares; or *(ii) will occur outside an urban area, where the total land to be developed is bigger* *than 1 hectare;* *excluding where such land has already been developed for residential, mixed, retail,* *commercial, industrial or institutional purposes.*			
Sloping and landscaping upon closure of the mining area.	4.9 ha	X	GNR 327 LN 1 Activity 22.
▪ GNR 327 Environmental Impact Assessment Regulations Listing Notice 1 of 2017 Activity 22: *The decommissioning of any activity requiring a closure certificate in terms of section 43 of the Mineral and Petroleum Resources Development Act, 2002 (Act No. 28 of 2002.*			

ii) Description of the activities to be undertaken

(Describe Methodology or technology to be employed, including the type of commodity to the prospected/mined and for a linear activity, a description of the rout of the activity)

Portion 4 of the Remaining Extent of the farm Brakfontein No 310 IR magisterial district of Highveld Ridge of Mpumalanga Province is situated approximately ±650m north of Leandra. The GPS coordinates of the proposed mining area are as follows:

Table 3: GPS Coordinates of the proposed mining footprint.

GPS COORDINATES OF MINING PERMIT AREA	
DEGREES MINUTES SECONDS	**DECIMAL DEGREES**
A 26°21'42.833"S; 28°54'32.188"E	A 26.361898°S; 28.908941°E
B 26°21'41.508"S; 28°54'30.092"E	B 26.36153°S; 28.908359°E
C 26°21'47.383"S; 28°54'26.51"E	C 26.363162°S; 28.907364°E
D 26°21'53.071"S; 28°54'31.352"E	D 26.364742°S; 28.908709°E
E 26°21'49.147"S; 28°54'37.876"E	E 26.363652°S; 28.910521°E
F 26°21'47.542"S; 28°54'38.736"E	F 26.363206°S; 28.91076°E
G 26°21'47.293"S; 28°54'37.685"E	G 26.363137°S; 28.910468°E
H 26°21'47.974"S; 28°54'37.213"E	H 26.363326°S; 28.910337°E
I 26°21'46.541"S; 28°54'32.234"E	I 26.362928°S; 28.908954°E
J 26°21'45.677"S; 28°54'30.776"E	J 26.362688°S; 28.908549°E
A 26°21'42.833"S; 28°54'32.188"E	A 26.361898°S; 28.908941°E

Project Proposal:

The proposed activity will entail the extension of the existing quarry pit (4.9 ha) in an area that has been mined for numerous years on a portion of Portion 4 of the Remaining Extent of the Farm Brakfontein No 310 IR magisterial district of Highveld Ridge of Mpumalanga Province. The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries.

The proposed mining area is approximately 4.9 ha is extent and the applicant, intents to win material from the area for at least 2 years with a possible extension of another 3 years. The gravel to be removed from the quarry will be used for construction industry in the vicinity. The proposed quarry will therefore contribute to the upgrading / maintenance of road infrastructure and building contracts in and around the Leandra area.

The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Excavating;
- Crushing;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

The proposed mining activities will entail the following:

- An existing access road to the mining area will be used.
- The proposed mining site will be over an undisturbed area of the farm occasionally used for grazing
- The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries. The aggregate / gravel will be stockpiled and transported to clients via trucks and trailers.
- All activities will be contained within the boundaries of the site.

Should the MP be issued and the mining of gravel be allowed, the proposed project will comprise of activities that can be divided into three key phases (discussed in more detail below) namely the:

(1) Site establishment/construction phase which will involve the demarcation of the permitted mining area. Site establishment will also necessitate the clearing of vegetation, the stripping and stockpiling of topsoil, and the introduction of mining machinery and equipment.

(2) Operational phase that will entail the mining of aggregate (dolerite) / gravel from the approved footprint area via conventional open cast mining methods. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to the crushing and screening processing plant where it will be screened to various sized stockpiles, before it is sold and transported from site to clients.

(3) *Decommissioning phase which entails the rehabilitation of the affected environment prior to the submission of a closure application to the Department of Mineral Resources and Energy (DMRE). The permit holder will further be responsible for the seeding of all rehabilitated areas. Once the full mining area is rehabilitated, the mining permit holder will be required to submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended)*.

- Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required), and weed / alien clearing.

- All infrastructures, equipment, and other items used during the mining period will be removed from the site (section 44 of the MPRDA).

- Waste material of any description, including receptacles, scrap, rubble and tyres, will be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be permitted to be buried or burned on the site.

- Weed / Alien clearing will be done in a sporadic manner during the life of the mining activities. Species categorised as weeds according to the National Environmental Management: Biodiversity Act (Act No. 10 of 2004) [NEMBA] Alien and Invasive Species Regulation GNR 598 and 599 of 2014 Species regarded as need to be eradicated from the site on final closure.

- Final rehabilitation shall be completed within a period specified by the Regional Manager. Once the mining area was rehabilitated, the mining permit holder will submit a closure application to the DMRE in accordance with section 43(4) of the MPRDA, 2002. The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

PHASES OF THE PROJECT

1. *Site Establishment Phase:*

   Site establishment entails the demarcation of the mining boundaries, clearance of vegetation and stripping and stockpiling of topsoil (if needed) from the mining area, and the introduction of the mining equipment as detailed below:

- **Demarcation of Mining Boundaries:**

  Pursuant to receipt of an Environmental Authorisation (EA) and Mining Permit (MP), and prior to site establishment, the boundaries of the mining area will be demarcated with visible beacons.

- **Access Road:**

  The farm road has a formal entrance, and was also used by the previous contractor to transport aggregate / gravel from and existing quarry. The applicant proposes to upgrade the road to allow comfortable movement of mining related equipment and vehicles. Haul roads into the excavation will be extended as mining progresses. The improvement of the access road, and establishment of haul roads will be below the threshold of the NEMA, 1998 EIA Regulations, 2017.

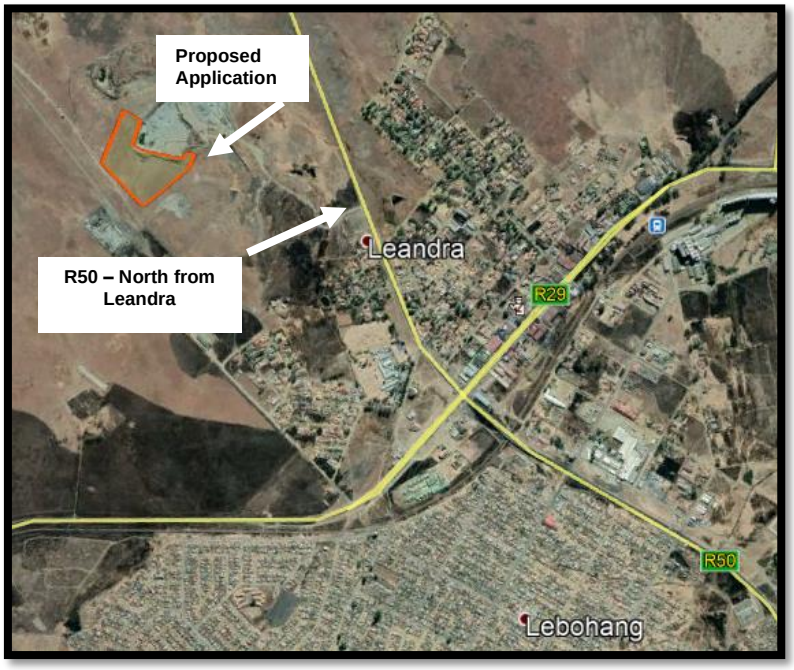

Figure 2: Satellite view showing the access road (white arrow) to the proposed mining area (orange polygon).

Figure 3: Photo showing the existing entrance into the mining area.

- **Clearing of Vegetation:**

According to Mucina and Rutherford (2012) the expansion area extends over a gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by Themeda triandra and accompanied by a variety of other grasses such as Elionurus muticus, Eragrostis racemosa, Heteropogon contortus and Tristachya leucothrix. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover. Only a handful of patches statutorily conserved (Waldrift, Krugersdorp, Leeuwkuil, Suikerbosrand, Rolfe's Pan Nature Reserves) or privately conserved (Johanna Jacobs, Tweefontein, Gert Jacobs, Nikolaas and Avalon Nature Reserves, Heidelberg Natural Heritage Site).

- **Topsoil Stripping:**

It is proposed that topsoil removal will be restricted to the exact footprint of areas required during the operational phase of the activity. The topsoil will be stockpiled at a designated signposted area within the mining boundary to be replaced during the rehabilitation of the area. It will be part of the obligations of site management to prevent the mixing of topsoil heaps with overburden/other soil heaps. The complete A-horizon (the top 100 – 200 mm of soil which is generally darker coloured due to high organic matter content) will be removed. If it is unclear where the topsoil layer ends the top 300 mm of soil will be stripped. The topsoil berm will measure a maximum of 1.5 m in height in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.

- **Introduction of Mining Machinery:**

  The mining site will contain the following:

  - Excavating equipment;
  - Earth moving equipment;
  - Mobile crushing and screening plants;
  - Site office (Container);
  - Site vehicles;
  - Parking area for visitors and site vehicles;
  - Weighbridge;
  - Ablution facilities (Chemical toilet).

2. *Operational Phase:*

The operational phase will involve the loosening of the hard rock of the quarry by blasting, upon which it will be mechanically recovered with drilling-, excavating- and earthmoving equipment. The rock will then be delivered to the crushing and screening plant where it will be reduced to various sized aggregate. The screened material will be delivered to various size category stockpiles. Transportation of the final product will be from the stockpile area to the end point by means of trucks. The contractor will make use of permanent employees and any additional employees required will be sourced from the surrounding area and daily be transported to site. All activities will be contained within the boundaries of the site. The mining activities will consist out of the following:

- Stripping and stockpiling of topsoil;
- Drilling and blasting
- Excavating;
- Crushing and screening;
- Stockpiling and transporting;
- Sloping and landscaping upon closure of the site; and
- Replacing the topsoil and vegetation the disturbed area.

- <u>Water Use:</u>

Any water required for the implementation of the project will be bought and transported to site.

Dust generated on the access road will, as far as possible, be managed through alternative dust suppression methods to restrict water use to the absolute minimum.

These measures will include a combination of the following:

- The speed of all mining equipment/vehicles will be restricted to 40 km/h on the internal road to minimize dust generation;
- When the truck leaves the mining area it will be covered (e.g. shade cloth material) to minimise windblown dust from the loads;
- The Applicant will attempt to lessen denuded areas (dust source) to the absolute minimum.

Under very windy/dusty conditions the permit holder might have to substitute the above mentioned dust suppression methods with the spraying of water, in which case water will be bought and transported to the mining area in a water truck that will moisten the problem area. The water truck driver will receive proper training to ensure effective use of the water on problem areas preventing water wastage.

- Electricity:

Generators will be used to power the plant on site, if a connection to the existing power infrastructure cannot be secured. Mobile containers will be placed inside the mining footprint that will serve as offices and storage units. A weighbridge will be added to the site and the crushing and screening plant will operate within a designated processing area (within the 4.9 ha permit footprint).

- Waste Handling:

Solid (general) waste, generated during the operational phase, will be contained in sealable refuse bins that will be placed at the office area until the waste is transported to a recognised general waste landfill site. The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must be disposed of at a waste disposal facility licensed to accept such waste or recycled or treated at a licensed waste treatment facility." the third party

collecting the waste must be licensed or accredited for waste collection. A recognized contractor will service the chemical toilets that will serve as ablution facilities to the employees.

Due to the nature of the project, the small scale of the proposed operation, and the fact that no permanent infrastructure will be established, very little to no general waste will be generated as a direct result of the mining activities. Any waste generated during the operational phase, will be contained in a sealable refuse bin that will be removed from site and incorporated in an approved waste disposal system of the contractor.

Likewise, very little (if any) generation of hazardous waste is expected. Hazardous waste will mainly be the result of accidental spillages or breakdowns. Such contaminated areas will be cleaned up immediately (within two hours of the occurrence) and contaminated soil will be contained in designated hazardous waste containers to be removed daily to the hazardous waste storage area at a designated off-site workshop where it will be disposed of as part of the hazardous waste by a registered hazardous waste handling contractor.

The chemical toilet, to be placed on site, will be serviced by a registered contractor.

- Servicing and Maintenance:

A temporary workshop and wash bay will be established on site where minor servicing and emergency repairs of mining related equipment/machinery will take place. The wash bay will have an impermeable floor and drain into an oil sump that will be serviced by a qualified contractor. No wash water will be allowed to drain into the surrounding environment. No bulk storing of fuel (>30 000 l) will take place on site, and any chemicals needed at the workshop will be stored in accordance with the product specific safety data sheet specifications in temporary containers/secured cages.

Regular vehicle maintenance, repairs and services may only take place in a demarcated service area. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be

removed from the emergency service area to the workshop in order to ensure proper disposal.

Decommissioning Phase:

The decommissioning phase will entail the reinstatement of the proposed mining footprint (4.9 ha).

The end objective is for the mining area to return to dormant agricultural use. No buildings/infrastructure, need to be demolished and the access road will remain intact.

The applicant will comply with the minimum closure objectives as prescribed DMRE and detailed below:

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil (see Appendix L for the Closure Plan).

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry pit;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be agriculture. Upon replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

- Rehabilitation of the excavated area:

The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

No waste may be permitted to be deposited in the excavations.

Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

- Rehabilitation of plant, office and service areas:

Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.

On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.

- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

e) Policy and Legislative Context

Table 4: Policy and Legislative Context.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity: *Physical Environment – Geology and Soil.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the CARA, 1983.
Mine Health and Safety Act, 1996 (Act No 29 of 1996) read together with applicable amendments and regulations thereto including relevant OHSA regulations.	Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of Health and Safety Risks.*	The mitigation measures proposed for the site includes specifications of the MHSA, 1996
Mineral and Petroleum Resources Development Act, 2002, (Act No. 28 of 2002) read together with applicable amendments and regulations thereto. ℑ Section 27	Part A(1)(d) Description of the scope of the proposed overall activity	Application for a mining permit submitted to DMRE-MP. Ref No: MP 30/5/1/1/3/12554 MP

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
National Environmental Management Act,1998 (Act No. 107 of 1998) and the Environmental Impact Assessment Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) • GNR 327 Listing Notice 1 Activity 21 • GNR 327 Listing Notice 1 Activity 22 • GNR 327 Listing Notice 1 Activity 27 • GNR 327 Listing Notice 1 Activity 28	Part A(1)(d)(i) Listed and specified activities.	Application for environmental authorisation submitted to DMRE-MP. Ref No: MP 30/5/1/1/3/12554 MP
National Environmental Management: Air Quality Control Act, 2004 (Act No 39 of 2004) read together with applicable amendments and regulations thereto specifically the National Dust Control Regulations, GN No R827.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Air and Noise Quality.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Dust Handling*.	The mitigation measures proposed for the site take into account the NEM:AQA, 2004 and the National Dust Control Regulations.
National Environmental Management Act: Biodiversity Act, 2004 (Act No. 10 of 2004) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity - *Biological Environment* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk – *Management of invader plant species*.	The mitigation measures proposed for the site includes specifications of the NEM:BA, 2004.
National Environmental Management: Waste Act, 2008 (Act No 59 of 2008) read together with applicable amendments and regulations thereto. NEM:WA, 2008: National norms and standards for the storage of waste (GN 926)	Part A(1)(d)(ii) Description of the activities to be undertaken	The mitigation measures proposed for the site take into account the NEM:WA.
National Heritage Resources Act. 1999 (Act No 25 of 1999).	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Human Environment*	The mitigation measures proposed for the site includes specifications of the NHRA, 1999.

APPLICABLE LEGISLATION AND GUIDELINES USED TO COMPILE THE REPORT (a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process)	**REFERENCE WHERE APPLIED**	**HOW DOES THIS DEVELOPMENT COMPLY AND RESPOND TO THE LEGISLATION AND POLICY CONTEXT.** (E.g. in terms of the National Water Act a Water Use License has/has not been applied for)
National Water Act, 1998 (Act No 36 of 1998) read together with applicable amendments and regulations thereto.	Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – *Hydrology.* Part A(1)(h)(viii) The possible mitigation measures that could be applied on the level of risk.	The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). As mentioned earlier, the proposed mining footprint extends into an area that has previously been used for mining, and all activities will take place by extending an existing mining area away from (in the opposite direction) of water bodies. Any water required for the implementation of the project will be bought from a registered source and transported to on site. The mitigation measures proposed for the site includes specifications of the NWA, 1998.
Public Participation Guideline in terms of the NEMA EIA Regulations	Part A(1)(h)(ii) Details of the Public Participation Process Followed	Public participation was conducted in accordance with the guidelines published in terms of the NEMA EIA Regulations

f) Need and desirability of the proposed activities.

(Describe Methodology or technology to be employed, including the type of commodity to the prospected/mined and for a linear activity, a description of the rout of the activity)

The increase in building, construction and road maintenance projects in the vicinity of the property triggered the need of the Applicant to trade with the available aggregate / gravel from a permitted area. The proposed activity will entail the extension of the existing quarry pit (4.9 ha) in an area that has been mined for numerous years. The mining of the mineral was identified as a feasible business opportunity that will also bring about the diversification of activities on the property, extending it from dormant agricultural land to include small scale mining.

The project will contribute to the local economy, both directly and through the multiplier effect that its presence will create, as equipment and supplies are purchased locally, and wages are spent at local businesses, generating both jobs and income in the area.

The aggregate mined from the earmarked area will be sold to the building, construction and road maintenance industry in the vicinity of the property. The mining of the aggregate from the proposed site will benefit the general society in that it will contribute to the upgrading of road infrastructure of the region, thereby enabling road users to safely travel through the district. The upgrading and maintenance of roads is of high priority and contributes to the improvement of the infrastructure network of South Africa.

The need and desirability of the proposed project was assessed in terms of the National Department of Environmental Affairs' Guideline on Need and Desirability (first version published in terms of section 24J of the NEMA in 2014, and second version in 2017)). The following table shows the questions that were considered in this regard.

Table 5: Need and desirability determination.

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
How were ecological integrity considerations taken into account? How will this development disturb or enhance ecosystems and/or result in the loss or protection of biological diversity?	As discussed under Part A(1)(g)(iv)(1)(a) Type of environment affected by the proposed activity, When the mining footprint is layered over the Mining and Biodiversity Map, as shown in the figure below, it falls over and area of Highest biodiversity importance - highest risk for mining. The Mining and Biodiversity Guideline's describes areas of moderate risk biodiversity importance as: "*These areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being".* An EIA should include the strategic assessment of optimum, sustainable land use mining, as the area, the overall environmental and socio-economic costs and benefits of This assessment should fully take into account the environmental sensitivity of for a particular area and will determine the significance of the impact on biodiversity. well as the potential strategic importance of the minerals to the country. Authorisations may well not be granted. If granted, the authorisation may set limits on into licence agreements and/or authorisations. allowed activities and impacts, and may specify. The project area is located in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. Ground-truthing showed that the proposed footprint of the mining area is extremely disturbed. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the biodiversity in general is only deemed to improve. Also refer to: ⋉ Part A(1)(d)(ii) Description of the activities to be undertaken – Clearing of Vegetation; ⋉ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Mining and Biodiversity;	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	⁎ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Biodiversity Conservation Areas; ⁎ Part A(1)(h)(iv)(1)(a) Type of environment affected by the proposed activity – Groundcover; ⁎ Part A(1)(h)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Terrestrial Biodiversity, Conservation Areas and Groundcover, ⁎ Part A(1)(h)(viii) The possible mitigation measures that could be applied and the level of risk. As discussed under *Part A(1)(g)(iv)(1)(a)*. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.	
How will this development pollute and/or degrade the biophysical environment?	Due of the nature of the proposed activity, it is inevitable that the present vegetation cover of the earmarked footprint will eventually be removed to allow access to the aggregate (dolerite) / gravel resource, only to be replaced (to some extend) during the rehabilitation phase. Taking the above mentioned into consideration, the ground truthing concluded that the quarry will have relatively little impact on the vegetation and fauna around it provided that the mitigation measures are adhered to. Therefore, should the permit holder adhere to the mitigation measures proposed in this report it is believed that the impact on the biophysical environment is of acceptable significance.	Desirable
What waste will be generated by this development?	The general waste to be generated at the mine will mainly consist of paper, plastic, tin, and/or glass from the office, workshop and processing area. All general waste will be contained in sealable refuse bins that will be placed at the office area until it is transported to a recognised general waste landfill site. A recognized contractor will service the chemical toilets and be responsible for the removal of the sewerage to a registered sewerage handling facility.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	As mentioned earlier, hazardous waste may result from accidental spillages/breakdowns. Such contaminated areas will immediately (within two hours of occurrence) be cleaned and the contaminated soil will be contained in a designated hazardous waste container that will be kept in a bunded area with impermeable surface until it is removed from site by a registered hazardous waste handling contractor to an approved facility. No waste will be disposed of, buried, burned or treated on the site.	
How will this development disturb or enhance landscapes and/or sites that constitute the nation's cultural heritage?	According to the Heritage Impact Assessment (see Appendix M), The study area is altered due to the development of a golf course, roads and an adjacent quarry, that would have obliterated surface indicators of heritage resources if any ever occurred in the study area. The study area is flat without focal points like natural pans or rocky outcrops that would have attracted human occupation in antiquity and is considered to be of low heritage potential. This was confirmed during the site visit when no heritage resources of significance were noted. The impact of the proposed project on heritage resources low and it is recommended that the proposed project can commence on the condition that the recommendations (Section 10.1 see Appendix M) are implemented as part of the EMPr and based on approval from SAHRA the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.	Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
	If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository.	
How will this development use and/or impact on non-renewable natural resources?	Leandra Quarry is a dolerite/gravel resource of at least 400 000 – 910 000m^3 that shows a potential life of mine of would still be available for many years. In light of this, it is believed that the mining permit holder could responsibly consume the dolerite resource on the property over a period of 5 years.	Desirable
How will this development use and/or impact on renewable natural resources and the ecosystem of which they are part?	It is proposed that approximately 10 000 litres of water will be needed per day during the dry months to manage dust emissions from the proposed operation. As mentioned earlier, the contractor will strive to manage dust generation through alternative suppression methods to restrict water use to the absolute minimum. Presently, it is proposed that water will be bought and transported to site. The contractor will be encouraged to consider the use of non-potable water for mining related activities. The use of solar power should also be considered as an alternative power source to the offices and/or workshops.	Desirable
How were a risk-averse and cautious approach applied in terms of ecological impacts?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that ecological impacts should be fully mitigated.	Desirable
How will the ecological impacts resulting from this development impact on people's environmental right?	Should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the ecological impacts associated with the proposed activity.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Describe the linkages and dependencies between human wellbeing, livelihoods and ecosystem services applicable to the area in question and how the development's ecological impacts will result in socio-economic impacts.	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner nor will the it impact negatively on the socio-economic status of the area.	Desirable
Based on all of the above, how will this development positively or negatively impact on ecological integrity objectives/targets/considerations of the area?		
Considering the need to secure ecological integrity and a healthy biophysical environment, describe how the alternatives identified, resulted in the selection of the "best practicable environmental option" in terms of ecological considerations		
2. PROMOTING JUSTIFIABLE ECONOMIC AND SOCIAL DEVELOPMENT		
What is the socio-economic context of the area?		

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Question	**Response**	**Level of Desirability**
What is the socio-economic context of the area?	Please refer to Heading 2(h)(iv)(1)(a) Socio-economic Environment.	Highly Desirable
Considering the socio-economic context, what will the socio-economic impacts be of the development, and specifically also on the socio-economic objectives of the area?	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities; • the people/businesses of Leandra and surrounding areas will benefit from diversification of gravel sources which will result in competitive product costs. • It will also diversify the income of the property as well as potential employees and clients.	
How will this development address the specific physical, psychological, developmental, cultural and social needs and interests of the relevant communities?	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not affect the physical, psychological, cultural or social needs of the community in a negative manner nor will the it impact negatively on the socio-economic status of the area.	Highly Desirable
Will the development result in equitable impact distribution, in the short- and long-term?	The mining activities proposes to operate in a socially and economically sustainable manner during both the short- and long term.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
In terms of location, describe how the placement of the proposed development will contribute to the area.	As mentioned above the proposed area is located in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the existing access road to the quarry which is currently in extremely bad visual state. Ground-truthing showed that the proposed footprint of the mining area is extremely disturbed. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the visual characteristics in general is only deemed to improve. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the surrounding area in general is deemed to be of low significancethereby keeping the impact on the receiving environment as low as possible.	Highly Desirable
How were a risk-averse and cautious approach applied in terms of socio-economic impacts?	No negative socio-economic impacts could, at this stage, be identified that cannot be managed through the implementation of mitigation measures.	Highly Desirable
How will the socio-economic impacts resulting from this development impact on people's environmental right?	As mentioned in Heading *3(j)(1) Impact on the socio-economic condition of any directly affected person*, the activity may have an impact on the visual characteristics of the surrounding environment, and may potentially affect air quality and possibly the noise ambiance of the study area. However, should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
Considering the linkages and dependencies between human wellbeing, livelihoods and ecosystem services, describe the linkages and dependencies applicable to the area in question and how the development's socio-economic impacts will result in ecological impacts?	As mentioned above should the mining activities be approved the potential visual-, dust-, and noise impacts associated with the proposed activity will be of low significance. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that no environmental rights of the surrounding residents/public will be affected by the socio-economic impacts associated with the proposed activity.	Highly Desirable
What measures were taken to pursue the selection of the "best practicable environmental option" in terms of socio-economic considerations?	Please refer to: • Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	Highly Desirable
What measures were taken to pursue environmental justice so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons?		
What measures were taken to pursue equitable access to environmental resources, benefits and services to meet basic human needs and ensure	The mining site will (if approved) operate in accordance with, amongst others, the following: • CARA, 1983 – to ensure agriculture related compliance; • Financial Provision Regulations, 2015 – to ensure compliance in terms of rehabilitation;	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
human wellbeing, and what special measures were taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination? What measures were taken to ensure that the responsibility for the environmental health and safety consequences of the development has been addressed throughout the development's life cycle?	• Mine Health and Safety Act, 1996 (as amended) – to ensure employee safety; • MPRDA, 2002 (as amended) – to ensure mining related compliance; • NEM:AQA, 2004 – to ensure air quality related compliance; • NEM:BA, 2004 – to ensure biodiversity related compliance; • NEM:WA, 2008 – to ensure waste related compliance; • NEMA, 1998 (as amended) – to ensure environmental related compliance;	
Considering the interests, needs and values of all the interested and affected parties, describe how the development will allow for opportunities for all the segments of the community that is consistent with the priority needs of the local area.	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities; • the people/businesses of Leandra and surrounding areas will benefit from diversification of aggregate (dolerite) / gravel sources which will result in competitive product costs. • It will also diversify the income of the property as well as potential employees and clients.	Highly Desirable
What measures have been taken to ensure that current and/or future workers will be informed of work that potentially might be harmful to human health or the environment or of dangers associated with the work, and what measures	The mining activities will be in accordance with the specifications of the Mine Health and Safety Act, 1996. Site management will have daily discussions with the drill rig operators regarding the work to be performed and the environment in which the work will take place. Grievances/concerns can be lodged during the daily site meetings.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
have been taken to ensure that the right of workers to refuse such work will be respected and protected.		
Describe how the development will impact on job creation in terms of, amongst other aspects?	As mentioned earlier, should this mining permit be approved the applicant will be able to, • Provide employment opportunities; • the people/businesses of Leandra and surrounding areas will benefit from diversification of aggregate (dolerite) / gravel sources which will result in competitive product costs. • It will also diversify the income of the property as well as potential employees and clients.	Highly Desirable
What measures were taken to ensure that the environment will be held in public trust for the people, that the beneficial use of environmental resources will serve the public interest, and that the environment will be protected as the people's common heritage.	Should the mining permit be approved the activities will operate under a valid mining permit issued by the DMRE, compliance of the mine with the approval conditions can be reported on as per the departmental specifications and also be managed in accordance with all the mining and environmental related legislations.	Highly Desirable
Are the mitigation measures proposed realistic and what long-term environmental legacy and managed burden will be left.	It is believed that the mitigation measures proposed in this document is realistic and can be implemented (when needed) by the proposed activities. If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, the residual impact on the environment is of low significance.	Highly Desirable

1. SECURING ECOLOGICAL SUSTAINABLE DEVELOPMENT AND USE OF NATURAL RESOURCES		
How will this development impact on the ecological integrity of the area?		
Question	**Response**	**Level of Desirability**
What measures were taken to ensure that the costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution environmental damage or adverse health effects will be paid for by those responsible for harming the environment.	In terms of Section 41 of the MPRDA, 2002 a mining permit holder must submit a financial provision to the DMRE that is sufficient to rehabilitate or manage the negative environmental impacts related to the mining activity.	Highly Desirable
Considering the need to secure ecological integrity and a healthy bio-physical environment, describe how the alternatives identified, resulted in the selection of the best practicable environmental option in terms of socio-economic considerations	Please refer to: - Part A(1)(g)(i) Details of the development footprint alternatives considered; - Part A(1)(g)(iv)(1)(c) Description of specific environmental features and infrastructure on the site – Site Specific Socio-Economic Environment; - Part A(1)(g)(vii) The positive and negative impacts that the proposed activity and alternatives will have on the environmental and the community that may be affected.	Highly Desirable
Describe the positive and negative cumulative socio-economic impacts bearing in mind the size, scale, scope and nature of the project in relation to its location and other planned developments in the area.	If the proposed mitigation measures and monitoring programs, as proposed in this document, is implemented, it is believed that the mining activities will not cause a cumulative socio-economic impact should the mining permit application be approved, seeing that there is no other rated activities in the vicinity.	Highly Desirable

g) Motivation for the overall preferred site, activities and technology alternative.

The proposed site (Site Alternative 1) was identified as the preferred and only viable site alternative based on the following:

- The proposed gravel mining operation will entail the removal of gravel, from and existing quarry, an area that was previously used for the same purpose with an easy and existing access to the mineral. The mining of the mineral was identified as a feasible business opportunity that will also bring about the diversification of activities on the property, extending it from dormant agricultural land to include small scale mining.
- The project will contribute to the local economy, both directly and through the multiplier effect that its presence will create, as equipment and supplies are purchased locally, and wages are spent at local businesses, generating both jobs and income in the area.
- The proposed project will not necessitate the loss of an area with high potential to the land owner. This was deemed the only site alternative as this an area previously disturbed.
- Access to the proposed mining area is possible via the existing access road with an entrance onto the R50.

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C).

h) Full description of the process followed to reach the proposed preferred alternatives within the site.

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

i) Details of the development footprint alternatives considered.

With reference to the site plan provided as Appendix 4 and the location of the individual activities on site, provide details of the alternatives considered with respect to:

(a) the property on which or location where it is proposed to undertake the activity;

(b) the type of activity to be undertaken;
(c) the design or layout of the activity;
(d) the technology to be used in the activity;
(e) the operational aspects of the activity; and
(f) the option of not implementing the activity.

Due to the application being an extension of an existing quarry, the proposed mining area, as indicated on the Regulation 2.2 Mine Plan (Appendix A), was identified as the preferred and only viable site alternative as it entails the mining of an area previously used for aggregate / gravel mining purposes.

Site Alternative 1 (S1) (Preferred and Only Site Alternative): Site Alternative 1 entails the mining of an area previously used for the mining of aggregate / gravel within the GPS coordinates as listed in the table below.

Table 6: GPS Coordinates of Site Alternative 1 (preferred and only site alternative)

NUMBER	DEGREES, MINUTES, SECONDS		DECIMAL DEGREES	
	LAT (S)	LONG (E)	LAT (S)	LONG (E)
A	26°21'42.833"S	28°54'32.188"E	26.361898°S	28.908941°E
B	26°21'41.508"S	28°54'30.092"E	26.36153°S;	28.908359°E
C	26°21'47.383"S	28°54'26.51"E	26.363162°S	28.907364°E
D	26°21'53.071"S	28°54'31.352"E	26.364742°S	28.908709°E
E	26°21'49.147"S	28°54'37.876"E	26.363652°S	28.910521°E
F	26°21'47.542"S	28°54'38.736"E	26.363206°S	28.91076°E
G	26°21'47.293"S	28°54'37.685"E	26.363137°S	28.910468°E
H	26°21'47.974"S	28°54'37.213"E	26.363326°S	28.910337°E
I	26°21'46.541"S	28°54'32.234"E	26.362928°S	28.908954°E
J	26°21'45.677"S	28°54'30.776"E	26.362688°S	28.908549°E
A	26°21'42.833"S	28°54'32.188"E	26.361898°S	28.908941°E

Figure 4: Satellite view showing the position of Site Alternative 1 (orange polygon) within the surrounding landscape.

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team, as the **preferred and only site alternative** due to the following:

- The proposed area is over an extension of an existing quarry. The proposed project will not necessitate the loss of an area with high potential to the land owner.
- Access to the proposed mining area is possible via the existing access road with a existing entrance onto the R50.

No-go Alternative: The no-go alternative entails no change to the *status quo* and is therefore a real alternative that needs to be considered. The aggregate / gravel to be mined from the existing quarry will be sold to the building, road rehabilitation/maintenance and associated construction industry, if however, the no-go alternative is implemented:

- the Applicant cannot utilise the mineral resource on this property;
- the proposed employment opportunities will be lost;

- the people/businesses of Leandra will not benefit from diversification of aggregate (dolerite) / gravel sources which will escalating product costs.

In light of this, the no-go alternative was no deemed to be the preferred alternative.

ii) Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

During the initial public participation process the stakeholders and I&AP's were informed of the project by means of background information documents that were sent or hand delivered directly to the contact persons. A 30-days commenting period was allowed which expired on 4th May 2021. The following I&AP's and stakeholders were informed of the project:

Table 7: List of the I&AP's and stakeholders that were notified of the proposed aggregate / gravel mine project.

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
Surrounding landowners & lawful occupiers: - Govan Mbeki Local Municipality –Landowner - Mr Johan Ueckermann – Surrounding Landowner – - Mr Francois Kemp – Surrounding Landowner - - Me Anneke Conradie (Sasol) – Surrounding Landowner	- Department of Agriculture, Rural Development, Land & Environmental Affairs; - Department of Economic Development, Environment and Tourism; - Department of Economic Development, Environment and Tourism – Environmental Impact Management; - Department of Public Works, Roads and Transport; - Department of Economic Development and Tourism; - Department of Water & Sanitation - Department of Rural Development and Land Reform; - Department of Labour; - Gert Sibande District Office; - Gert Sibande District Municipality; - Gert Sibande District Municipality – Planning; - Govan Mbeki Local Municipality; - Govan Mbeki Local Municipality - Ward 1; - South African Heritage Resource Agency;

SURROUNDING LANDOWNERS & INTERESTED AND AFFECTED PARTIES	STAKEHOLDERS
	• Eskom
I&AP'S AND STAKEHOLDERS THAT REGISTERED/COMMENTED DURING THE INITIAL NOTIFICATION PERIOD	
• None	

An advertisement was placed in the "The Ridge Times" on 2 April 2021, and two on-site notices were placed at conspicuous places (Govan Mbeki Local Municipality building en Leandra Quarry boundary fence). A 30-days commenting period was allowed which expired on 4 May 2021. In accordance with the timeframes stipulated in the EIA Regulations, 2014 (as amended by GNR 326 effective 7 April 2017) the Draft Basic Assessment Report was compiled and distributed for comment and perusal to the I&AP's and stakeholders. A 30-day commenting period, ended 1 July 2021, was allowed for perusal of the documentation and submission of comments. The comments received on the DBAR was incorporated into this Final Basic Assessment Report (FBAR) to be submitted for decision making to DMRE.

iii) Summary of issues raised by I&APs

(Compile the table summarising comments and issues raised, and reaction to those responses)

Table 8: Summary of issues raised by IAPs

Interested and Affected Parties **List the name of persons consulted in this column, and** **Mark with an X where those who must be consulted were in fact consulted**		**Date Comments Received**	**Issues raised**	**EAPs response to issues as mandated by the applicant**	**Section and paragraph reference in this report where the issues and or response were incorporated.**
AFFECTED PARTIES	**X**				
Landowner/s					
Govan Mbeki Local Municipality	X	No comments recevied			N/A.
Lawful occupier/s of the land					
N/A		N/A	N/A	N/A	
Landowners or lawful occupiers on adjacent properties	**X**	-	-	-	-
Mr Johan Ueckermann	X	No comments recevied	N/A	N/A	N/A
Actop (Mr Francois Kemp)	X	No comments recevied	N/A	N/A	N/A
SASOL (Me Anneke Conradie)	X	30 March 2021	MRE ref: MP 30/5/1/1/3/12554 MP Reference is made to the legal notice placed in the Ridge Times of 2 April 2021 regarding the application by Inzalo Crushing and Aggregates (Pty) Ltd for a mining permit for stone aggregate over a portion of Portion 4 of the farm Brakfontein 310 IR. It will be appreciated if Sasol Mining (Pty) Ltd be registered as an interested and affected party (IAP) with Paul Cronje, Head Mining Rights and Land (copied here) as the contact person with telephone number 017 614 8001?	DMRE ref: MP 30/5/1/1/3/12554 MP 1. Your email dated 30 March 2021 10:30 AM, as set out hereunder refers. 2. Thank you for taking part in the public participation process and providing us with the detail of the prospecting rights. 3. Sasol Mining (Pty) Ltd with Paul Cronje, Head Mining Rights and Land are hereby registered as interested and affected party and will receive all the related information regarding this application as the application progress. 4. Please find attached hereto the background information document as	Appendix F2: Proof of public participation process

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			Please note that Sasol Mining is the holder of a prospecting right for coal with DMRE reference numbers MP 30/5/1/1/2/5476 PR and 14762 PR (renewal) over various portions of the farms Brakfontein 310 IR and Goedehoop 308 IR, which include Portion 4 of Brakfontein 310 IR. As Sasol Mining may conduct prospecting activities on Portion 4 where your mining activities are proposed, kindly indicate how you propose to manage the shared rehabilitation, access, damage compensation, etc? It will also be appreciated if you could provide us with a plan of the application area, as well as more details on the proposed mining activities, access roads, water use, rehabilitation, etc?	well as the regulation 2.2 plan for the application area. 5. We have send your contact details to the applicant and you will be contacted to discuss a co-existence agreement. Please do not hesitate to contact us should you require any additional information.	
		3 May 2021	No response received	DMRE ref: MP 30/5/1/1/3/12554 MP Our email dated March 30, 2021 12:37 PM, as set out hereunder refers. Please confirm if the information send was in order or do you have any further concerns? Please do not hesitate to contact us should you require any additional information.	Appendix F2: Proof of public participation process
Municipal councillor					
Cllr LM Mbonani Govan Mbeki Local Municipality - Ward 1	X	No comments recevied	N/A	N/A	N/A

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Municipality					
Govan Mbeki Local Municipality	X	No comments recevied	N/A	N/A	N/A
Gert Sibande District Municipality	X	No comments recevied	N/A	N/A	N/A
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					N/A
Department of Public Works, Roads and Transport	X	No comments recevied	N/A	N/A	N/A
Eskom	X	22 April 2021.	We refer to your application dated 30 March 2021. Eskom Distribution services are not affected by this application. We thank you and hope that you find the above in order, and please don't hesitate to contact us should you've any queries or seek clarity.	Thank you your response in this regard is highly appreciated.	Appendix F2: Proof of public participation process
Communities	N/A	No community were identified within the study area.			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Dept. Land Affairs					
Department of Agriculture, Rural Development, Land & Environmental Affairs;	X	N/A	N/A	N/A	N/A
Department of Economic Development, Environment and Tourism	X	N/A	N/A	N/A	N/A
Department of Rural Development and Land Reform	X	N/A	N/A	N/A	N/A
Traditional Leaders	N/A				
Dept. Environmental Affairs					
Department of Economic Development, Environment and Tourism	X	N/A	N/A	N/A	N/A
Department of Economic Development, Environment and Tourism – Environmental Impact Management	X	No comments received			
Other Competent Authorities affected					
Department of Labour;	X	No comments received	N/A	NA	N/A
Department of Public Works, Roads and Transport	X	No comments received	N/A	N/A	N/A

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
South African Heritage Resources Agency	X	No comments received	N/A	N/A	N/A
OTHER AFFECTED PARTIES					
N/A					
INTERESTED PARTIES					
N/A					

Table 9: Summary of issues raised by IAPs during DBAR phase

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
AFFECTED PARTIES	**X**				
Landowner/s					
Govan Mbeki Local Municipality	X	No comments recevied			N/A.
Lawful occupier/s of the land					
N/A		N/A	N/A	N/A	
Landowners or lawful occupiers on adjacent properties	**X**	-	-	-	-

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Mr Johan Ueckermann	X	No comments recevied	N/A	N/A	N/A
Actop (Mr Francois Kemp)	X	No comments recevied	N/A	N/A	N/A
SASOL (Me Anneke Conradie)	X	No comments recevied	N/A	N/A	N/A
Mr Francois Kemp					
Mr Johan Ueckermann					
Me Lydia Zeko					
Me Anneke Conradie					
Mr Ockert Els – Attorney acting on behalf of De Lange Family Trust					
Mr Michael Saul Katz					
Mev Swanepoel					

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
• Mr Swanepoel					
Municipal councillor					
• Cllr LM Mbonani Govan Mbeki Local Municipality - Ward 1	X	No comments recevied	N/A	N/A	N/A
Municipality					
Govan Mbeki Local Municipality	X	3 June 2021	Good morning, Please provide Govan Mbeki with the complete document (application for permit and relevant studies) The property belong the GMM and no application to access the land have been submitted to date. Please provide all relevant documentation in this regard.	Dear Mr van der Merwe Please find the DBAR for Leandra available on our website, https://www.greenmined.com/projects/Leandra_Quarry/DBAR%20-%20Leandra.pdf Do not hesitate to let me know if you need anything else.	Appendix F2: Proof of public participation process
	X	10 June 2021	N/A	Dear Mr van der Merwe Please refer to the previous email sent to Marlene Lingenfelder.	

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
				This refers to the approval that we need to obtain from the Properties section, and in which you referred us to Sabeth Nkosie. We are struggling to get hold of Sabeth and would like to find out how the process works. Any assistance in this regard would much be appreciated.	
	X	15 June 2021	Zoel, I think you do not understand, I will not arrange access for you. You have to do it yourself. The details of the relevant officials was indicated in my prior emails.	Thank you Mr Van der Merwe, As indicated by Zoë, we do not get any response from the relevant officials, that is why we are contacting you. Any assistance from you in this regard will be highly appreciated.	
	X		N/A	Good day gentlemen, I trust this email finds you well. This email refers to the approval that we need to obtain from the Properties section, and in which Sabeth Nkosie was referred. We are not able to get hold of Sabeth and would like to find out how the process works. Numerous emails have been send as you can see below. Your assistance in this regard would be highly appreciated. Please find BID and DBAR notification regarding the mining Permit Application that was send to Mr S Vilakazi attached. The DBAR for Leandra is also available on our website, https://www.greenmined.com/projects/Leandra_Quarry/DBAR%20-%20Leandra.pdf	

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
				Do not hesitate to contact me if you anything else.	
Govan Mbeki Local Municipality Deputy Director Solid Waste & Environmental Services	X	7 July 2021 (Letter dated 3 June 2021)	The above subject matter bears reference: The land is earmarked for the Regional landfill site for the next 50 years and more and according to the Dept. Planning & Dev, was the only municipal land available for current and future landfill development within GMM. All the section Solid Waste Management current and future waste management plans are referring to the Leandra landfill and therefore we object to the proposed mining, unless the municipality can identify an alternative, more suitable municipal land, which are more centralised near Evander/ eMbalenhle/ Secunda, which we would prefer to save on the cost of transport etc.	Your objection will be included in our FBAR and submitted to DMRE for their decision making. I trust you find this in order,	Appendix F2: Proof of public participation process
Govan Mbeki Local Municipality Deputy Director Solid Waste & Environmental Services	X	14 July 2021	As discussed; there are approximately 15 old graves situated on portion 4 of the farm Brakfontein 310-IR. It's located approximately 800m on the right next to the road leading to the landfill site. Coordinates S26°21.394'; E028°54.192'.	Please see attached google placemark for this application, it seems that the area mentioned in your objection is not part of our application area, Can we please just clarify whether we are talking about the same area? Our application is to extent the existing quarry on the property. In discussions with our archeologist he confirmed that the graves indicated by you are far north from our application area, Your response in this regard will be highly appreciated.	Appendix F2: Proof of public participation process
Govan Mbeki Local Municipality Deputy Director Solid Waste & Environmental Services	X	15 July 2021	The objection is not only based on a grave site, hence the whole portion 4 of the farm Brakfontein 310 IR in Leandra is licensed for landfill (License no 17/4/WL/MP307/14/03)	Your objection will be included in our FBAR and submitted to DMRE for their decision making.	Appendix F2: Proof of public participation process

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			and future landfill site development by the Department of Environmental Affairs, which includes the quarry area. Based on the waste licensed issued, the proposed activity is not recommended and the applicant need to engage the Department of Environmental Affairs to get authorization to proceed with the activity as it will affect the scope of the waste license.	I trust you find this in order,	
Govan Mbeki Local Municipality Department: Planning and Economic Development	X	28 July 2021	RE: OBJECTION TO OBAR LEANORA MP 30/511/'J/2112554 MP -GMLM MINING APPLICATION The above subJect matter bear's reference· The land is earmarked for the regional landfill site for the next 50 years. According to the Department Planning & Development. this was the only mumcipal land available for current and future landfill development within GMM. Solid Waste Management current and future waste management plans are referring to the Leandra landfill and therefore we OBJECT to the proposed mining.	We take note of your objection sent 28 July 2021, it will be included in our FBAR and submitted to DMRE for their decision making. I trust you find this in order,	Appendix F2: Proof of public participation process
Gert Sibande District Municipality	X	18 June 2021	The following are comments from Gert Sibande District Municipality for consideration of the application: • The applicant must ensure that the requirements of the National Environmental Management Act (Act 107 of 1998), its Specific Environmental Management Acts	The above matter as well as letter received from you dated 18 June 2021 refers. Please see responses to your comments listed below: • The applicant must ensure that the requirements of the National Environmental Management Act (Act 107 of 1998), its Specific Environmental Management Acts and the Gert Sibande District Municipality By-Laws (No.2300 of 2014) are adhered to.	Part A(d)(h)(m) Part B(d)(f)(k) Appendix F2: Proof of public participation process

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			and the Gert Sibande District Municipality By-Laws (No.2300 of 2014) are adhered to. • In reference to page 123 of the basic assessment report which states that the proposed mining footprint extends into an area that has previously been used for mining. No protected or red data animal or plant species were identified during the site inspection, and no fauna will be impacted by the proposed prospecting as they will be able to move away or through the site without being harmed. It is proposed that should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the riparian vegetation, groundcover and/or fauna is deemed to be of low significance. Therefore, in light of the site-specific state of the earmarked area there is no need for a TBIA, PSA or ASA. No activities must be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan. • Duty of care principle as per the National Environmental Management Act (107 of 1998) as amended must be taken into	○ Comment noted this will be implemented and adhered to • In reference to page 123 of the basic assessment report which states that the proposed mining footprint extends into an area that has previously been used for mining. No protected or red data animal or plant species were identified during the site inspection, and no fauna will be impacted by the proposed prospecting as they will be able to move away or through the site without being harmed. It is proposed that should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the riparian vegetation, groundcover and/or fauna is deemed to be of low significance. Therefore, in light of the site-specific state of the earmarked area there is no need for a TBIA, PSA or ASA. No activities must be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan. ○ Comment noted this will be implemented and adhered to • Duty of care principle as per the National Environmental Management Act (107 of 1998) as amended must be taken into account throughout the proposed project during all operations and close up. ○ Comment noted this will be implemented and adhered to • In reference to page 66 of the Draft Basic Assessment report which states that no rivers NFEPA of conservation importance extends over the proposed footprint, two artificial wetlands are located east of the site but will not be affected as the mining operations will be located away from	

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			account throughout the proposed project during all operations and close up. • In reference to page 66 of the Draft Basic Assessment report which states that no rivers NFEPA of conservation importance extends over the proposed footprint, two artificial wetlands are located east of the site but will not be affected as the mining operations will be located away from the existing site. Please note that the district does not support any activities within 50 m of a water body or the rechanneling of a water body. • In reference to page 123 of the Draft Basic Assessment report which states that the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment-, operational- and decommissioning phases. In our opinion this project does not necessitate an HIA & PIA. The following mitigation measures should be taken into consideration for the heritage impacts from the	the existing site. Please note that the district does not support any activities within 50 m of a water body or the rechanneling of a water body. o Comment noted this will be implemented and adhered to • In reference to page 123 of the Draft Basic Assessment report which states that the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment-, operational- and decommissioning phases. In our opinion this project does not necessitate an HIA & PIA. The following mitigation measures should be taken into consideration for the heritage impacts from the project to be considered low: Implement chance find procedures in case where possible heritage finds are uncovered and No development within 50 meters from the heritage site. These mitigation measures should form part of the EMPr. o Comment noted this will be implemented and adhered to • Water used for human consumption must comply with South African National Standards (241 1: 2015) for drinking water including for consumption by animals and regularly tested at the accredited laboratory. o Comment noted this will be implemented and adhered to • The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must be disposed of at a	

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			project to be considered low: Implement chance find procedures in case where possible heritage finds are uncovered and No development within 50 meters from the heritage site. These mitigation measures should form part of the EMPr. • Water used for human consumption must comply with South African National Standards (241 1: 2015) for drinking water including for consumption by animals and regularly tested at the accredited laboratory. • The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must be disposed of at a waste disposal facility licensed to accept such waste or recycled or treated at a licensed waste treatment facility." the third party collecting the waste is to be licensed or accredited for waste collection. • There should be strict adherence to national road traffic Act prescriptions including District Noise By -laws. • The EMPr must include detailed but not be limited to the following:	waste disposal facility licensed to accept such waste or recycled or treated at a licensed waste treatment facility." the third party collecting the waste is to be licensed or accredited for waste collection. o Comment noted this will be implemented and adhered to • There should be strict adherence to national road traffic Act prescriptions including District Noise By -laws. o Comment noted this will be implemented and adhered to • The EMPr must include detailed but not be limited to the following: ▪ Environmental Pollution Prevention Plan ▪ Site specific Rehabilitation Plan ▪ Incident Emergency Plan ▪ Site Environmental Management Operational Plan o Comment noted this will be implemented and adhered to • Any complaints received from the public during the proposed activity phases must be documented and reported to the competent authority, Gert Sibande District Municipality and Govan Mbeki Local Municipality.	

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			▪ Environmental Pollution Prevention Plan ▪ Site specific Rehabilitation Plan ▪ Incident Emergency Plan ▪ Site Environmental Management Operational Plan • Any complaints received from the public during the proposed activity phases must be documented and reported to the competent authority, Gert Sibande District Municipality and Govan Mbeki Local Municipality. • All incidents or complaints should be reported to the competent authority, Gert Sibande District Municipality and Govan Mbeki Local Municipality. • Monthly reports on the implementation of the EMPr must be sent to the relevant authorities.	○ Comment noted this will be implemented and adhered to • All incidents or complaints should be reported to the competent authority, Gert Sibande District Municipality and Govan Mbeki Local Municipality. ○ Comment noted this will be implemented and adhered to • Monthly reports on the implementation of the EMPr must be sent to the relevant authorities. ○ Comment noted this will be implemented and adhered to All comments received for you as well as our response will be incorporated in the Final Basic Assessment Report to be submitted to DMRE for their consideration.	

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
	X	3 June 2021	The above subject matter bears reference: The land is earmarked for the Regional landfill site for the next 50 years and more and according to the Dept. Planning & Dev, was the only municipal land available for current and future landfill development within GMM. All the section Solid Waste Management current and future waste management plans are referring to the Leandra landfill and therefore we object to the proposed mining, unless the municipality can identify an alternative, more suitable municipal land, which are more centralised near Evander/ eMbalenhle/ Secunda, which we would prefer to save on the cost of transport etc.		
Organs of state (Responsible for infrastructure that may be affected Roads Department, Eskom, Telkom, DWA e					N/A
Department of Public Works, Roads and Transport	X	No comments recevied	N/A	N/A	N/A
Eskom	X	No comments recevied	N/A	N/A	N/A

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Communities	N/A	No community were identified within the study area.			
Dept. Land Affairs					
Department of Agriculture, Rural Development, Land & Environmental Affairs;	X	N/A	N/A	N/A	N/A
Department of Economic Development, Environment and Tourism	X	N/A	N/A	N/A	N/A
Department of Rural Development and Land Reform	X	N/A	N/A	N/A	N/A
Traditional Leaders	N/A				
Dept. Environmental Affairs					
Department of Economic Development, Environment and Tourism	X	N/A	N/A	N/A	N/A
Department of Economic Development, Environment and Tourism – Environmental Impact Management	X	No comments received			

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
Other Competent Authorities affected					
Department of Labour;	X	No comments received	N/A	NA	N/A
Department of Public Works, Roads and Transport	X	No comments received	N/A	N/A	N/A
Department of Water and Sanitation	X	No comments received	N/A	N/A	N/A
South African Heritage Resources Agency	X	7 June 2021	A Basic Assessment report was submitted to the South African Heritage Resources Agency (SAHRA) for commenting in terms of section 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA). The draft BAR report states that the area was previously mined and no heritage impact asssessment is required. There is no indication that the statement in the draft BAR is a recommendation by a suitably qualified archaeologist no does it conform to section 38(3). Interim Comment As the proposed development is undergoing an EA Application process in terms of the National Environmental Management Act,	A Heritage Impact Assessment (HIA) was done as per section 38(3) and 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA). This included an archaeological component, palaeontological component and any other applicable heritage components. The findings of the above requested studies were as follows. According to the Heritage Impact Assessment (see Appendix M), The study area is altered due to the development of a golf course, roads and an adjacent quarry, that would have obliterated surface indicators of heritage resources if any ever occurred in the study area. The study area is flat without focal points like natural pans or rocky outcrops that would have attracted human occupation in antiquity and is considered to be of low heritage potential. This was confirmed during the site visit when no heritage resources of significance were noted.	Appendix F2: Proof of public participation process

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			107 of 1998 (NEMA), NEMA Environmental Impact Assessment (EIA) Regulations for activities that trigger the Mineral and Petroleum Resources Development Act, No 28 of 2002 (MPRDA)(As amended), it is incumbent on the developer to ensure that a Heritage Impact Assessment (HIA) is done as per section 38(3) and 38(8) of the National Heritage Resources Act, Act 25 of 1999 (NHRA). This must include an archaeological component, palaeontological component and any other applicable heritage components. The HIA must be conducted as part of the EA Application in terms of NEMA and the NEMA EIA Regulations. The archaeological component of the HIA should follow the SAHRA 2007 Minimum Standards: Archaeological Component of Impact Assessment Report. The quickest process to follow for the archaeological component would be to contract a qualified archaeologist (see www.asapa.co.za or www.aphp.org.za). The Minimum Standards refers to a Letter of Recommendation for Exemption from further studies, that may be submitted should the archaeologist deem it appropriate. Any other heritage resources as defined in section 3 of the NHRA that may be impacted, such as built structures over 60 years old,	The impact of the proposed project on heritage resources low and it is recommended that the proposed project can commence on the condition that the recommendations (Section 10.1 see Appendix M) are implemented as part of the EMPr and based on approval from SAHRA the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains. If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository.	

Interested and Affected Parties List the name of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted		Date Comments Received	Issues raised	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issues and or response were incorporated.
			sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict, and cultural landscapes or viewscapes must also be assessed. The applicant is advised to extend the BAR process in terms of section 19(1)b of the NEMA EIA regulations in order to comply with this comment. Further comments will be issued upon receipt of the requested.		
OTHER AFFECTED PARTIES					
N/A					
INTERESTED PARTIES					
N/A					

iv) The Environmental attributes associated with the alternatives.

(The environmental attributes described must include socio-economic, social, heritage, cultural, geographical, physical and biological aspects)

(1) Baseline Environment

(a) Type of environment affected by the proposed activity.

(Its current geographical, physical, biological, socio-economic, and cultural character)

This section describes the biophysical, cultural and socio-economic environment that may be affected and the baseline conditions, which are likely to be affected by the proposed mining activity.

PHYSICAL ENVIRONMENT

CLIMATE

According to the weather online website, Leandra lies on 1,675m above sea level. Leandra 0is influenced by the local steppe climate. Annually, the rainfall is 548 mm. It receives the lowest rainfall (0.1 mm) in July and the highest (294.4 mm) in February. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Leandra range from 15°C in August to 26°C in January. The region is the coldest during July when the mercury drops to 4°C on average during the night the maximum temperatures are usually experienced in December when temperatures rises to 28°C.

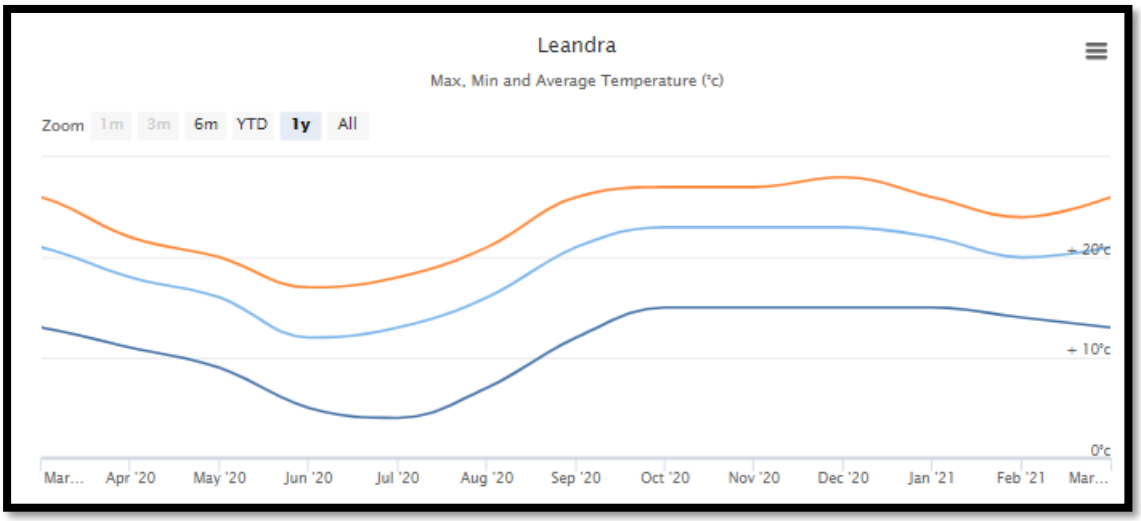

Figure 5: Statistical representation of the temperatures for the Leandra region (Chart obtained from http://www.worldweatheronline.com).

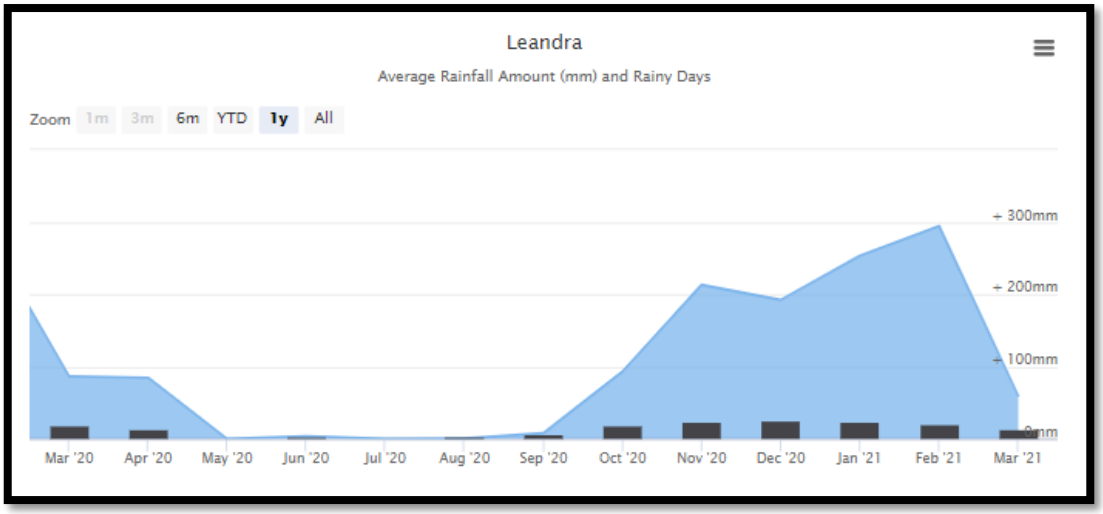

Figure 6: Statistical representation of the precipitation for the Leandra region (Chart obtained from http://www.worldweatheronline.com).

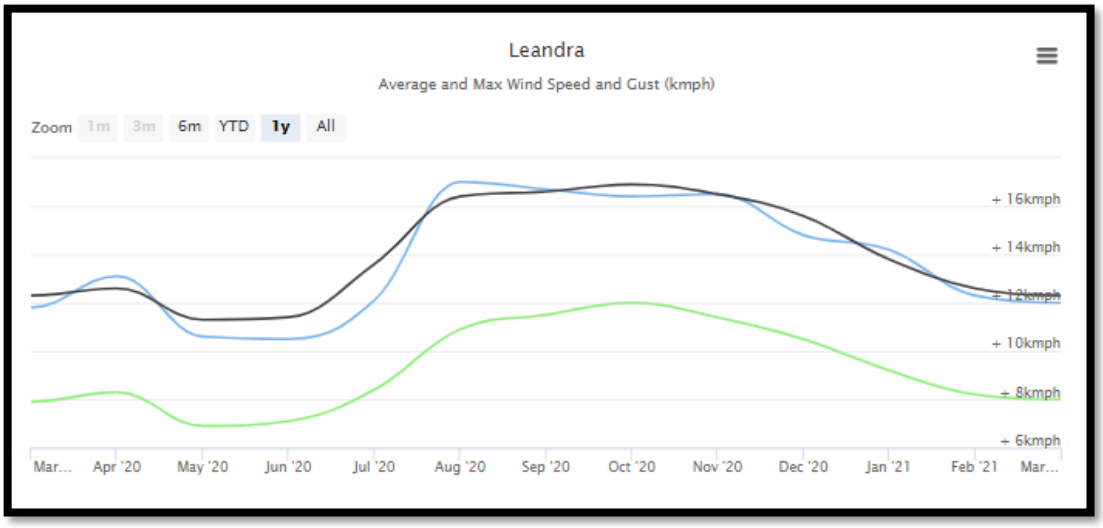

Figure 7: Statistical representation of the wind speed for the Leandra region (Chart obtained from http://www.worldweatheronline.com).

According to the wind statistics as presented on Windfinder.com the prevalent wind direction distribution of Springs (closest weather station) is in a North north westerly, with the average wind speed being 4 knots (±7.4 km/h) as shown in the figure below.

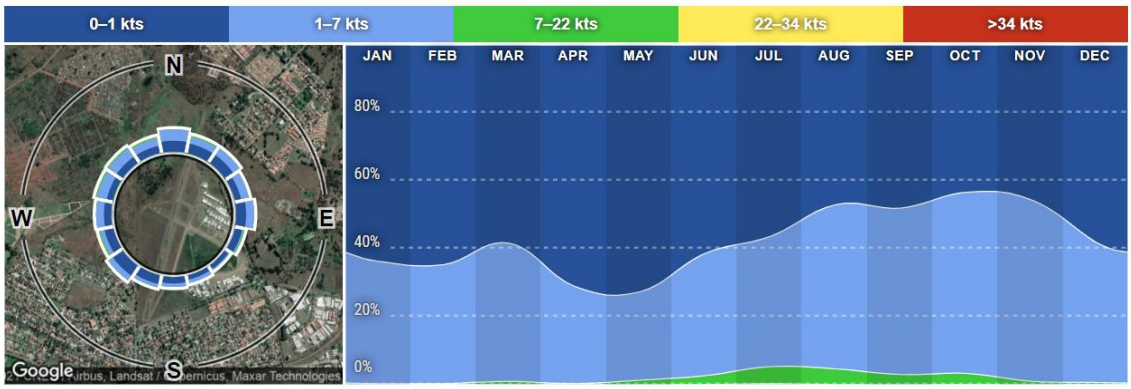

Figure 8: Statistical representation of the wind speed for the Leandra region (figure obtained from https://www.windfinder.com/windstatistics/springs_airport) Statistics based on observations taken between 12/2011 - 04/2021.

TOPOGRAPHY

Gently to moderately undulating landscape on the Highveld plateau. Altitude 1 420–1 760. The figure below shows the elevation loss from the proposed mining footprint to the town of Leandra to be 0 m over 500 m.

Figure 9: Elevation profile showing the topography between the proposed mining footprint yellow line) and the town of Leandra. (Image obtained from Google Earth).

VISUAL CHARACTERISTICS

The project area is located in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the existing access road to the quarry which is currently in extremely bad visual state.

Ground-truthing showed that the proposed footprint of the mining area is extremely disturbed. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the visual characteristics in general is only deemed to improve.

AIR AND NOISE QUALITY

The wind patterns in Leandra are somewhat influenced by seasonal variations. According to worldweatheronline.com strong winds blow between August and December with an average of 12kmph and slowly decreases 7.5kmph between January and June. The ambient noise levels of the surrounding area are low with the noise levels of the greater surrounding area are low representing that of a rural area, with the noise levels of the study area (immediate surroundings) impacted by industrial operations and the R50.

GEOLOGY AND SOIL

The geology of the study area comprises mostly Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types.

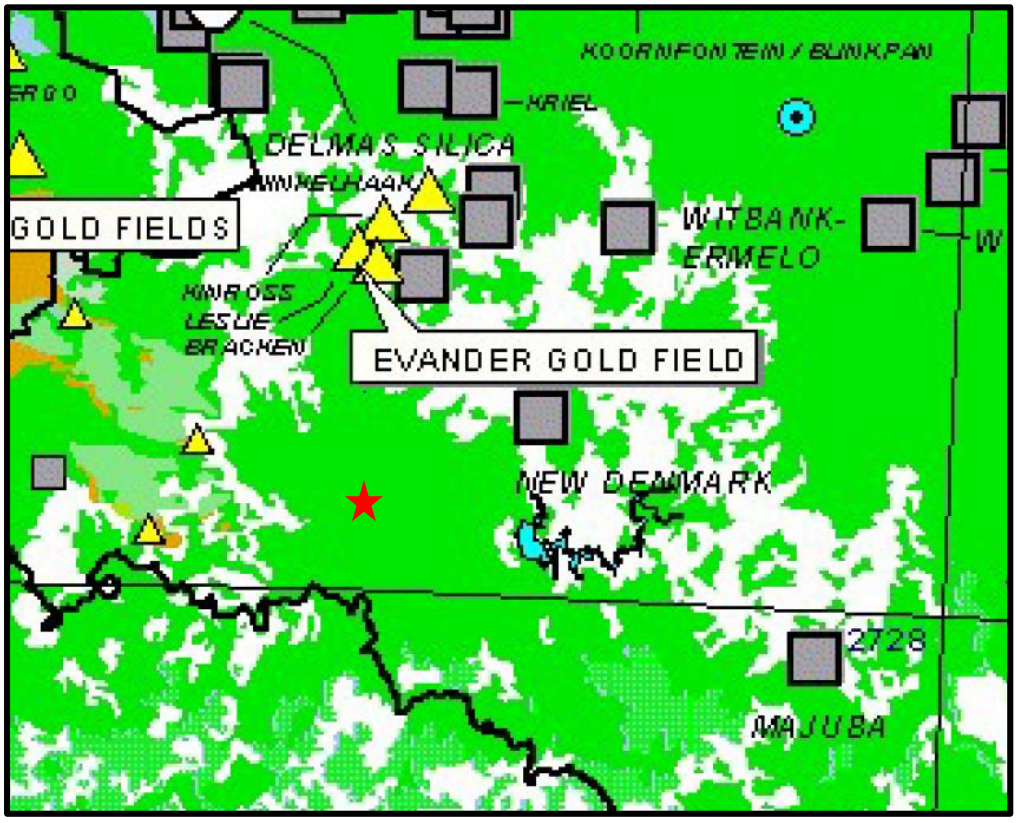

Figure 10: Indication of the simplified geology of the study area, where green represents the Beaufort Group (Karoo Supergroup). The proposed mining area is indicated by the red star. (Image obtained from the Council for Geoscience)

HYDROLOGY

The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). As mentioned earlier, the proposed mining footprint extends into an area that has previously been used for

mining, and all activities will take place by extending an existing mining area away from (in the opposite direction) of water bodies. No activities will take place within 50 m of a water body or the rechanneling of a water body. Any water required for the implementation of the project will be bought from a registered source and transported to on site.

Table 10: Aquatic characteristics of the greater study area

Water Management Area	Olifants WMA 3
Sub Water Management Area	Upper Olifants Sub-WMA
Quaternary Catchment	B20E
FEPA Status	No fresh water priority area status

According to the National Freshwater Ecosystem Priority Areas (NFEPA) map as presented by SANBI, no rivers NFEPA of conservation importance extends over the proposed footprint, two artificial wetlands are located east of the site but will not be affected as the mining operations will be located away from the existing site (see figure below).

Figure 11: Map showing the proposed mining footprint (purple polygon). (Image obtained from the BGIS Map Viewer – National Wetlands and NFEPA)

BIOLOGICAL ENVIRONMENT

MINING AND BIODIVERSITY

(Information extracted from the Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector, Department of Environmental Affairs, Department of Mineral Resources, Chamber of Mines, 2013)

The Mining and Biodiversity Guideline, compiled by the South African Mining and Biodiversity Forum (SAMBF) provides the mining sector with a practical, user-friendly manual for integrating biodiversity considerations into planning processes and managing biodiversity during the developmental and operational phases of a mine, from exploration through to closure.

When the mining footprint is layered over the Mining and Biodiversity Map, as shown in the figure below, it falls over and area of Highest biodiversity importance - highest risk for mining. The Mining and Biodiversity Guideline's describes areas of moderate risk biodiversity importance as: "*These areas are viewed as necessary to ensure protection of biodiversity, environmental sustainability, and human well-being"*. An EIA should include the strategic assessment of optimum, sustainable land use mining, as the area, the overall environmental and socio-economic costs and benefits of This assessment should fully take into account the environmental sensitivity of for a particular area and will determine the significance of the impact on biodiversity. well as the potential strategic importance of the minerals to the country. Authorisations may well not be granted. If granted, the authorisation may set limits on into licence agreements and/or authorisations. allowed activities and impacts, and may specify.

The project area is located in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes.

Ground-truthing showed that the proposed footprint of the mining area is extremely disturbed. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the biodiversity in general is only deemed to improve.

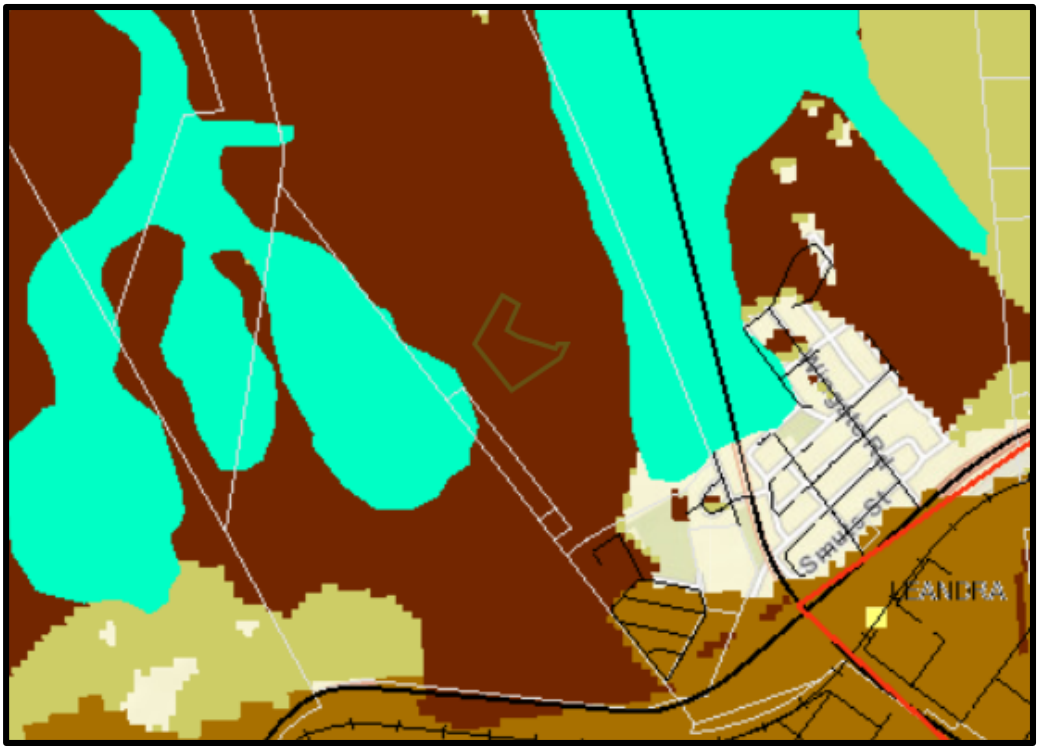

Figure 12: The Mining and Biodiversity importance map with the proposed mining footprint indicated by the green polygon. Dark brown – B. Highest biodiversity importance - highest risk for mining – (image obtained from the BGIS Map Viewer – Mining Guidelines).

BIODIVERSITY CONSERVATION AREAS

The Mpumalanga Biodiversity Plan (MPBP) shows that the proposed mining footprint falls within an Other Natural Area. The category is described to be Natural to Near-Natural – Minimise habitat and species loss and ensure ecosystem functionality through strategic landscape planning. Offers flexibility in permissible land uses, but some authorisation may still be required for high impact land uses as per the Biodiversity Spatial Plan Land Use Guidelines and Compliance Requirements.

Figure 13: Mpumalanga Biodiversity Conservation Plan showing the mining area (purple polygon) in relation to the degraded areas (purple). (Image obtained from BGIS Map Viewer – Mpumalanga Conservation Plan).

GROUNDCOVER

According to Mucina and Rutherford (2012) the vegetation type of the surrounding natural areas are known as the Soweto Highveld Grassland (Gm 8) that is gently to moderately undulating landscape on the Highveld plateau supporting short to medium-high, dense, tufted grassland dominated almost entirely by *Themeda triandra* and accompanied by a variety of other grasses such as *Elionurus muticus*, *Eragrostis racemosa*, *Heteropogon contortus* and *Tristachya leucothrix*. In places not disturbed, only scattered small wetlands, narrow stream alluvia, pans and occasional ridges or rocky outcrops interrupt the continuous grassland cover.

Some of the important taxa found in this vegetation type include *Graminoids: Andropogon appendiculatus (d), Brachiaria serrata (d), Cymbopogon pospischilii (d), Cynodon dactylon (d), Elionurus muticus (d), Eragrostis capensis (d), E. chloromelas (d), E. curvula (d), E. plana (d), E. planiculmis (d), E. racemosa (d), Heteropogon contortus (d), Hyparrhenia hirta (d), Setaria nigrirostris (d), S. sphacelata (d), Themeda triandra (d), Tristachya leucothrix (d), Andropogon schirensis, Aristida adscensionis, A. bipartita, A. congesta, A. junciformis subsp. galpinii, Cymbopogon caesius, Digitaria diagonalis, Diheteropogon amplectens, Eragrostis micrantha, E. superba, Harpochloa falx, Microchloa caffra, Paspalum dilatatum. Herbs: Hermannia depressa (d), Acalypha angustata, Berkheya setifera, Dicoma anomala, Euryops gilfillanii, Geigeria aspera var. aspera, Graderia subintegra, Haplocarpha scaposa, Helichrysum miconiifolium, H. nudifolium var. nudifolium, H. rugulosum, Hibiscus*

pusillus, Justicia anagalloides, Lippia scaberrima, Rhynchosia effusa, Schistostephium crataegifolium, Selago densiflora, Senecio coronatus, Vernonia oligocephala, Wahlenbergia undulata. Geophytic Herbs: Haemanthus humilis subsp. hirsutus, H. montanus. Herbaceous Climber: Rhynchosia totta. Low Shrubs: Anthospermum hispidulum, A. rigidum subsp. pumilum, Berkheya annectens, Felicia muricata, Ziziphus zeyheriana.

The vegetation type is classified as endangered. According to Mucina and Rutherford (2012) Endangered. Target 24%. Only a handful of patches statutorily conserved (Waldrift, Krugersdorp, Leeuwkuil, Suikerbosrand, Rolfe's Pan Nature Reserves) or privately conserved (Johanna Jacobs, Tweefontein, Gert Jacobs, Nikolaas and Avalon Nature Reserves, Heidelberg Natural Heritage Site). Almost half of the area already transformed by cultivation, urban sprawl, mining and building of road infrastructure. Some areas have been flooded by dams (Grootdraai, Leeukuil, Trichardtsfontein, Vaal, Willem Brummer). Erosion is generally very low (93%).

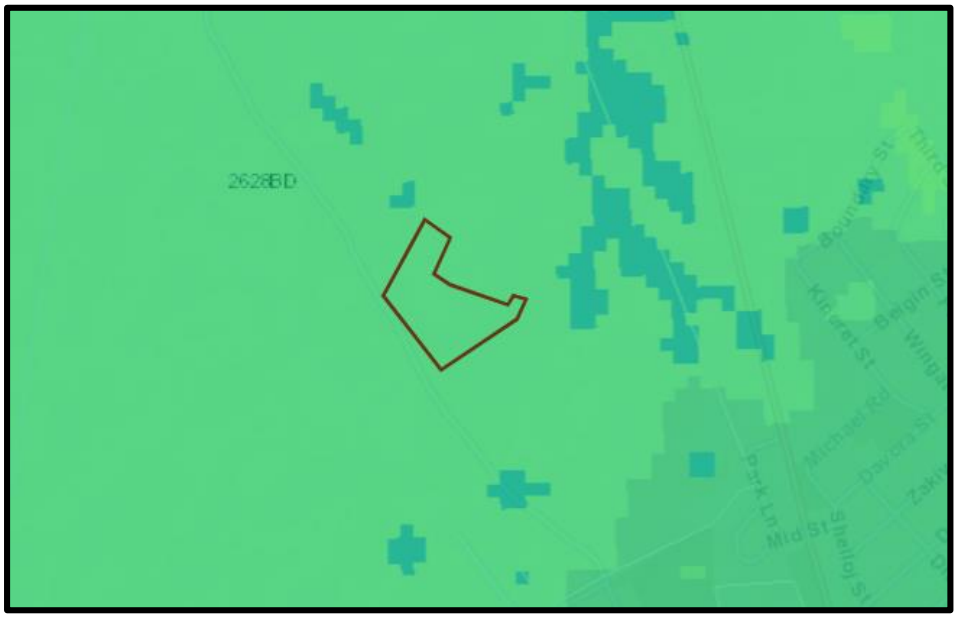

Figure 14: National vegetation cover map showing the mining area within the Soweto Highveld Grassland (Gm 8) (green). (Image obtained from BGIS Map Viewer – National Vegetation Map).

FAUNA

Various small mammals and reptiles occur are likely to on the property. The fauna at the site will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. The study area falls over a property that is noted to be open area with no fencing, should this mining permit be granted farm owner will be consulted prior to commencement of any activities to ensure that safety of animals and workers. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench. No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.

HUMAN ENVIRONMENT:

CULTURAL AND HERITAGE ENVIRONMENT

The South African Heritage Resources Agency (SAHRA) compiled the Palaeontological (fossil) Sensitivity Map (PSM) to guide developers, heritage officers and practitioners in screening paleontologically sensitive areas at the onset of a project. When the footprint of the earmarked mining area is placed on the PSM, the SAHRIS palaeo-sensitivity map (see https://sahris.sahra.org.za/map/palaeo) indicates that the footprint of the proposed quarry is located in an area of insignificant/zero (grey) palaeontological sensitivity (as presented in the figure below). The sensitivity of the southern portion of the site is rated by SAHRIS as insignificant. as presented in the figure below.

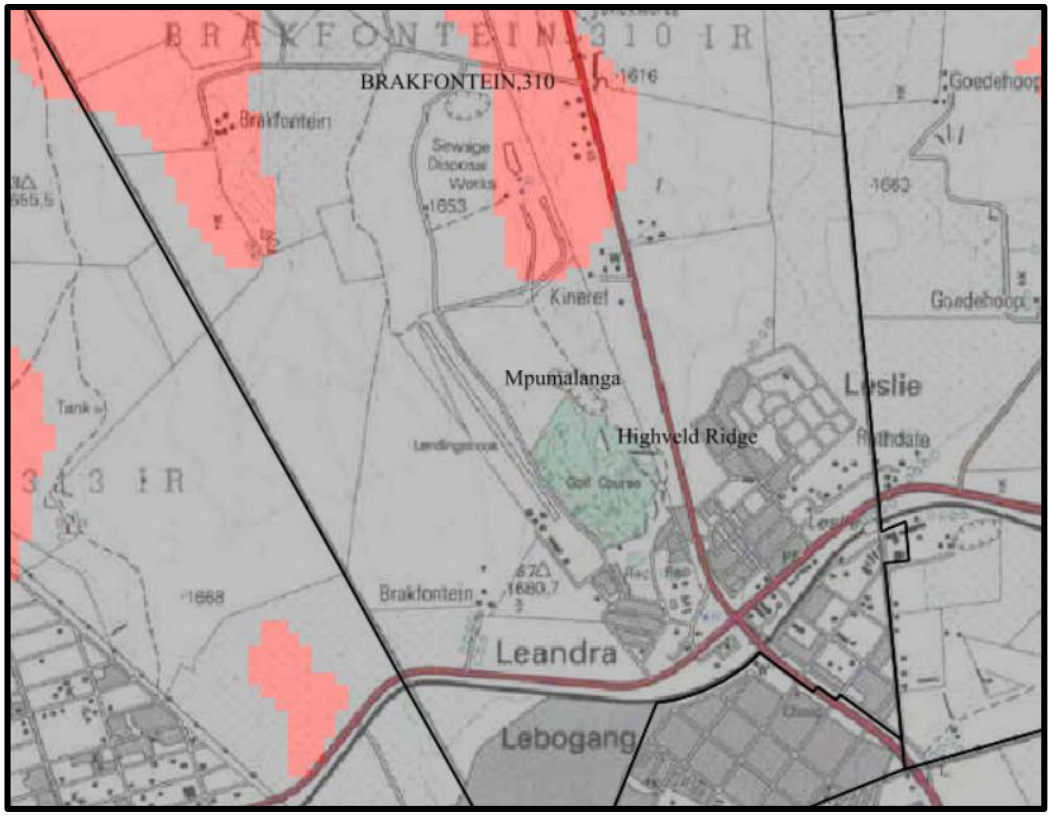

Figure 15: Screengrab from the SAHRIS palaeo-sensitivity map showing the location of the proposed mining area straddling an area of insignificant/zero (grey) palaeontological sensitivity (Source: https://sahris.sahra.org.za/map/palaeo).

SOCIO-ECONOMIC ENVIRONMENT

(Information extracted from the Govan Mbeki Local Municipality Integrated Development Plan – 2020/21)

The proposed mining area is located within ward 1 of the Govan Mbeki Local Municipality. The Govan Mbeki Local Municipality (previously Highveld East Local Municipality) is situated in the Gert Sibande District in the Mpumalanga Province. It is bordered by the Nkangala District in the north, Dipaleseng and Lekwa in the south, Msukaligwa in the east, and the Gauteng Province in the west. It is one of the smallest of seven municipalities that make up the district, accounting for 9% of its geographical area. Secunda is the seat of the municipality, as well as the seat of the district municipality. Area: 2 955km²

According to Census 2011, the Afrikaans language is spoken by more than 15.8% of the people, residing in the municipal area, with IsiZulu spoken by about 47% of the residents. The languages most spoken in the household are; IsiZulu (47.0%), IsiNdebele (7.6%) and Afrikaans (15.8%).

Gender Profile

Age and gender of the population are the key determinant of population dynamic and can influence the current and future needs and spending of the municipality

2011Census Population Size					2016 Community Survey Population Size			
Age	Male	Female	Grand Total		Age	Male	Female	Grand Total
0 - 4	15129	15176	30305		00-04	14866	14931	29796
5 - 9	12843	12761	25604		05-09	15040	14725	29766
10 - 14	11778	11517	23295		10-14	12999	13165	26164
15 - 19	12898	12842	25740		15-19	15709	14773	30481
20 - 24	17261	14449	31710		20-24	19121	15683	34805
25 - 29	18512	14829	33341		25-29	23295	19082	42377
30 - 34	14306	11136	25441		30-34	17572	14691	32264
35 - 39	11027	9795	20822		35-39	13397	11550	24947
40 - 44	9202	8910	18112		40-44	10364	9294	19658
45 - 49	8330	8689	17019		45-49	9383	9153	18536
50 - 54	7741	7338	15079		50-54	8017	7277	15294
55 - 59	5608	5021	10629		55-59	7127	6259	13386
60 - 64	3272	3308	6580		60-64	4121	4214	8334
65 - 69	1962	2321	4283		65-69	2931	3089	6020
70 - 74	1020	1834	2854		70-74	1832	2359	4191
75 - 79	703	1123	1826		75-79	614	1237	1851
80 - 84	328	717	1045		80-84	435	1073	1508
85+	291	560	851		85+	116	595	711
Grand Total	152211	142326	294538		Grand Total	176939	163152	340091

Figure 16: Gender distribution (Information extracted from the Govan Mbeki Municipality Integrated Development Plan – 2020/21) - Source: Statistics South Africa: Community Survey, 2016.

The analysis of the age and gender distribution of Govan Mbeki Municipality particularly highlight growth trends, the gender ratio, and functional age categorisation and how the age distribution impacts dependency on the working population. These statistics provide important insights into the age groups, where the bulk of the population is located and to target government, civil society and non-governmental programmes more effectively. The 65 year and older age group gives an indication of persons that have retired and are elderly and potentially no longer economically active. It highlights the gender distribution for the GMM, based on the differentiation between male and female according to age groups. The age and gender distribution for Govan Mbeki is predominantly evenly spread out with males (52%) dominating females (48%). The 0 to 14 age group provides an indication of those persons still dependent on their parents and that are thus not economically active, whilst the 15 to 64-year age group shows persons potentially economically active within the population.

The male population in Govan Mbeki is higher than female population in Govan Mbeki. The gender ratio in 2011 was 106.95 males per 100 females, which had changed to 108.45 males per 100 females in 2016.

The female population over time has consistently been greater than that of the male population. The sex ratio indicates the number of males to every 100 females within the municipality has only increased in 2011 but declined back to its 2001 figure in 2016. Within 2001, 2011 and 2016, those aged 0-4, 5-9 and 15-19 have consistently had a

higher male to female ratio. In 2016 however there was also subsequently and increase in the male to female ratio of persons aged 20-24 and 45-49.

Such high sex ratio towards man are mainly due to a due to beneficial employment opportunities as more men living in Govan Mbeki seeking for job opportunities in the various industries across the district which are manufacturing, industrial and mining companies.

Socio-Economic Development

The Socio-Economic Development Indicators of Govan Mbeki Local Municipality are recorded as per below table. The table illustrates the distribution of average monthly household income within the GMM. Households in this instance can be classified as poor, when their average monthly household income equates to anything between the margins of no income to R3 200 per month. When taking this into consideration with the information provided in the table above the majority of employed persons in the municipality earn a low income. Approximately 62% of the employed population earn a salary between R1 and R38 400 annually, which sets the basis for a low paid labour force and high poverty rates in GMM.

Socio-Economic Development		Years	Mpumalanga	Gert Sibande	Govan Mbeki
Human Development Index (includes literacy rate, life expectency & HH income: 0= worst to 1=best)		2001		1	1
		2010		1	1
Gini-coefficient		2001		1	1
		2010		1	1
Poverty Rate		2001		51	36
		2010		47	34
Unemployment rate(strict definition)	General(15-65 years)	1996	35	33	30
		2001	43	43	40
		2011	32	30	26
	Persons with Disability(15-65 years)	1996	41	42	40
		2001	44	46	46
	Women(15-65 years)	1996	47	47	48
		2001	54	55	56
		2011	39	38	35

	Youth(15-35 years)	1996	42	40	37
		2001	53	52	51
		2011	40	38	34
Socio-Economic Development		**Years**	**Mpumalanga**	**Gert Sibande**	**Govan Mbeki**
Household Income	R 1 - R 4800	2011	56 376	13 166	2 994
	R 4801 - R 9600		94 174	21 798	4 585
	R 9601 - R 19 600		199 651	49 366	10 574
	R 19 601 - R 38 200		213 459	54 122	13 821
	R 38 201 - R 76 400		142 599	37 104	12 620
	R 76 401 - R 153 800		94 878	25 450	9 773
	R 153 801 - R 307 600		66 100	18 013	7 601
	R 307 601 - R 614 400		36 749	10 275	5 354
	R 614 001 - R 1 228 800		11 052	3 253	2 124
	R 1 228 801 - R 2 457 600		3 045	974	588
	R 2 457 601 or more		2 204	613	280
Social grant beneficiaries in absolute numbers (Sept 2012)	Old Age	(Sept 2012)	200 618	50 184	7 272
	War Veteran		26	5	0
	Disability		75 385	22 617	2 802
	Foster Care		23 799	7 371	1 094
	Care Dependency		7 592	1 930	195
	Child Support		517 273	121 401	10 321
	Grant-in-Aid		2 428	510	85

Figure 17: Source for the illustration is based on the Stats SA census 2011 and Stats SA, Community Survey 2016)

Of the total number of households within Govan Mbeki LM, 56% fall within the poverty range as can see form the illustration below. This poses significant challenges when related to the quality of life of these households, not being able to afford school fess, lack of medical care, lack of food and lack of services. The share of population in Govan Mbeki below the so-called lower-bound poverty line (of Stats SA) deteriorated from 30.2% in 2014 to 34.6% in 2017.Govan Mbeki's share of population below the lower-bound poverty line was however, the 4th lowest (favourable) among the municipal areas.The number of people below the lower bound poverty line was high at almost 111 815. According to the 2016 CS of Stats SA, the so-called poverty headcount (multi-dimensionally) of Govan Mbeki however, improved from 4.5% in 2011 to 3.9% in 2016 and was lowest in the Province – the so-called poverty intensity, increased also slightly from 42.0% to 42.5% in the same period.

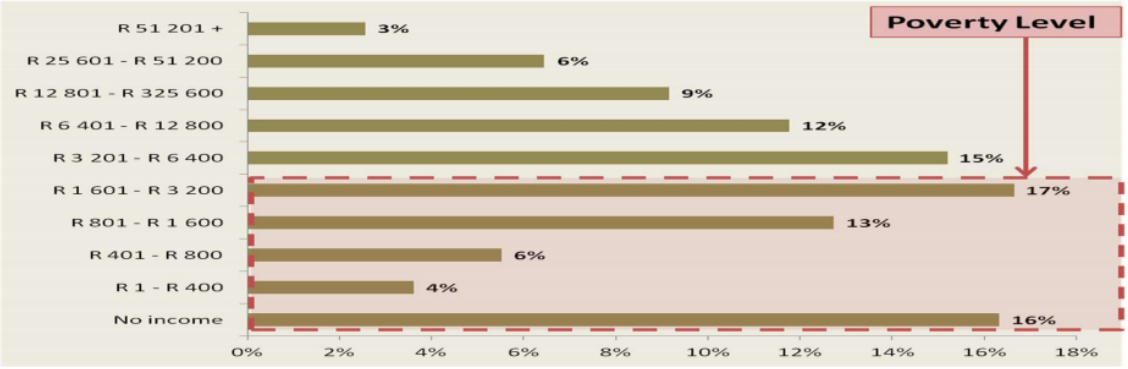

Figure 18: Average Household Income (Information extracted from the Govan Mbeki Municipality Integrated Development Plan – 2020/21) - Source: Statistics South Africa: Community Survey, 2016.

Population Profile

According to Stats SA (2016 Community Survey - CS), Govan Mbeki's population increased from 294 538 in 2011 to 340 091 people in 2016 – 5th largest population in the province and 30% of total population of Gert Sibande in 2016 making it the 1st largest population in the Gert Sibande District. This could be the result of people migrating to the municipality seeking job opportunities as Govan Mbeki is considered to be one of the economical hub of Mpumalanga for job seekers .Population grew by 45 553 in the relevant period and recorded a population growth rate of 3.3% (2nd highest in Mpumalanga) per annum between 2011 & 2016. The population number for 2019 is estimated at 374 883 people (4th highest and 8.2% of the MP Population in 2019) and in 2030 estimated at 535 796 (10.2%) given the historic population growth per annum – will put pressure on the infrastructure, service delivery and economic/employment opportunities.

Education Levels

The Figure below is an indication of the education levels of persons 20 years of age and higher within the Govan Mbeki.

According to the 2016 CS of StatsSA, the population in Govan Mbeki aged 20+ completed grade 12, increased from 82 235 in 2011 to 107 061 (increase of 24 286) in 2016 – an increase of 30.2% in the relevant period. Govan Mbeki's grade 12 pass rate improved from 71.3% in 2011 to 73.0% in 2017 – 6th lowest/worst among the municipal areas of the Province

Socio-Economic Development		Years	Mpumalanga	Gert Sibande	Govan Mbeki
Highest Educational attainment(20+ years)	No schooling	1996	30	29	20
	Matric only		15	13	16
	Matric +		5	5	7
	No schooling	2001	29	26	16
	Matric only		18	16	21
	Matric +		6	5	7
	No schooling	2011	14	13	8
	Matric only		30	29	33
	Matric+		9	9	12
	No schooling	2016	18	17	13
	Matric only		21	21	26
	Matric+		4	4	6

Figure 19: Socio-Economic Development (Source for the illustration is based on the Stats SA census 2011 and Stats SA, Community Survey 2016)

Employment Profile

The largest employing industries in Govan Mbeki community services, trade (including tourism), mining, manufacturing, finance and agriculture. High labour intensity in industries such as agriculture.

The unemployment rate of Govan Mbeki increased from 22.4% in 2013 to 23.3% in 2017.Govan Mbeki's unemployment rate was however, the 3rd lowest among all the municipal areas of Mpumalanga. Increase in employment level between 2014 and 2017, but at a slow rate. Only more or less 2 900 new employment opportunities per annum in the 3-year period.

Govan Mbeki's sector GDPR contributions, percentage shares of the economy and Tress Index ranking per sector			
Economic Sector	GDPR (Rands)	% Share	Tress Index Ranking
Mining	10 574 495 600	39%	9
Manufacturing	6 590 891 943	24%	8
Wholesale and trade	4 168 093 454	15%	7
Government and community service	2 396 477 705	9%	6
Business services	1 338 062 167	5%	5
Transport	1 189 554 953	4%	4
Agriculture	367 050 120	1%	3
Construction	354 147 947	1%	2
Electricity and water	351 098 875	1%	1
Total:	**27 329 872 764**	**100%**	**n.a.**
Tress Index: 62.5			

Figure 20: Income levels (Information extracted from the Govan Mbeki Municipality Integrated Development Plan – 2020/21) - Source: Statistics South Africa: Census 2001 - 2011.

(b) Description of the current land uses

Portion 4 of the Remaining Extent of the farm Brakfontein 310, in the Highveld Ridge magisterial district of the Mpumalanga Province is situated in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The R50 forms the eastern boundary of the farm. The land use of the property mainly comprises of dormant agricultural land. The land use was also extended to include small scale mining.

The main land use of the surrounding properties is agricultural. The following table provides a description of the land uses and/or prominent features that currently occur within a 500 m radius of the proposed site:

Table 11: Land uses and/or prominent features that occur within 500 m radius of S1.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Natural area	**YES**	-	The study area is surrounded by natural areas used for agricultural (agricultural) purposes.
Low density residential	-	**NO**	
Medium density residential	-	**NO**	The proposed footprint forms part of Govan Mbeki Local Municipality grounds.
High density residential	-	**NO**	
Informal residential	-	**NO**	
Retail commercial & warehousing	-	**NO**	
Light industrial	-	**NO**	The proposed footprint forms part of Govan Mbeki Local Municipality grounds.
Medium industrial	-	**NO**	
Heavy industrial	-	**NO**	
Power station	-	**NO**	
High voltage power line	-	**NO**	
Office/consulting room	-	**NO**	
Military or police base / station / compound	-	**NO**	
Spoil heap or slimes dam	-	**NO**	
Quarry, gravel or borrow pit	**YES**	-	The footprint of the proposed mining area extends over an area previously used for gravel mining purposes.
Dam or reservoir		**NO**	
Hospital/medical centre	-	**NO**	
School/ crèche	-	**NO**	
Tertiary education facility		**NO**	
Church	-	**NO**	
Old age home	-	**NO**	
Sewage treatment plant	-	**NO**	
Train station or shunting yard	-	**NO**	
Railway line	-	**NO**	The nearest railway line is located ±3.4 km from the earmarked area.

LAND USE CHARACTER	YES	NO	DESCRIPTION
Major road (4 lanes or more)		**NO**	The R50 passes the site on the eastern side
Airport	-	**NO**	.
Harbour	-	**NO**	
Sport facilities	-	**NO**	
Golf course	-	**NO**	
Polo fields	-	**NO**	
Filling station	-	**NO**	
Landfill or waste treatment site	**YES**		
Plantation	-	**NO**	
Agriculture	**YES**	-	The proposed footprint forms part of Govan Mbeki Local Municipality grounds.
River, stream or wetland	**YES**		
Nature conservation area	-	**NO**	
Mountain, hill or ridge	-	**NO**	
Museum	-	**NO**	
Historical building	-	**NO**	
Protected Area	-	**NO**	
Graveyard	-	**NO**	
Archaeological site	-	**NO**	
Other land uses (describe)	-	**NO**	

(c) Description of specific environmental features and infrastructure on the site.

SPECIFIC ENVIRONMENTAL FEATURES

SITE SPECIFIC TOPOGRAPHY

Gently to moderately undulating landscape on the Highveld plateau. Altitude 1 420–1 760. The figure below shows the elevation loss from the proposed mining footprint to the town of Leandra to be 0 m over 500 m.

Figure 21: Elevation profile of the proposed mining footprint (Image obtained from Google Earth).

SITE SPECIFIC VISUAL CHARACTERISTICS

The proposed mining activities will be visible within close proximity (±1 km radius) of the footprint. However, as one moves away the visibility of the area greatly lessens. The figure below shows the viewshed analysis for the footprint within a ±10 km radius. The green shaded areas show the positions from where the mining area will be visible. From this analysis it is proposed that the visual impact of the proposed gravel mining operation will be of low significance, especially as no permanent structures will be constructed. The small scale of the proposed operation, and the mining area will be located between two hills in order to minimize the visual impact. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

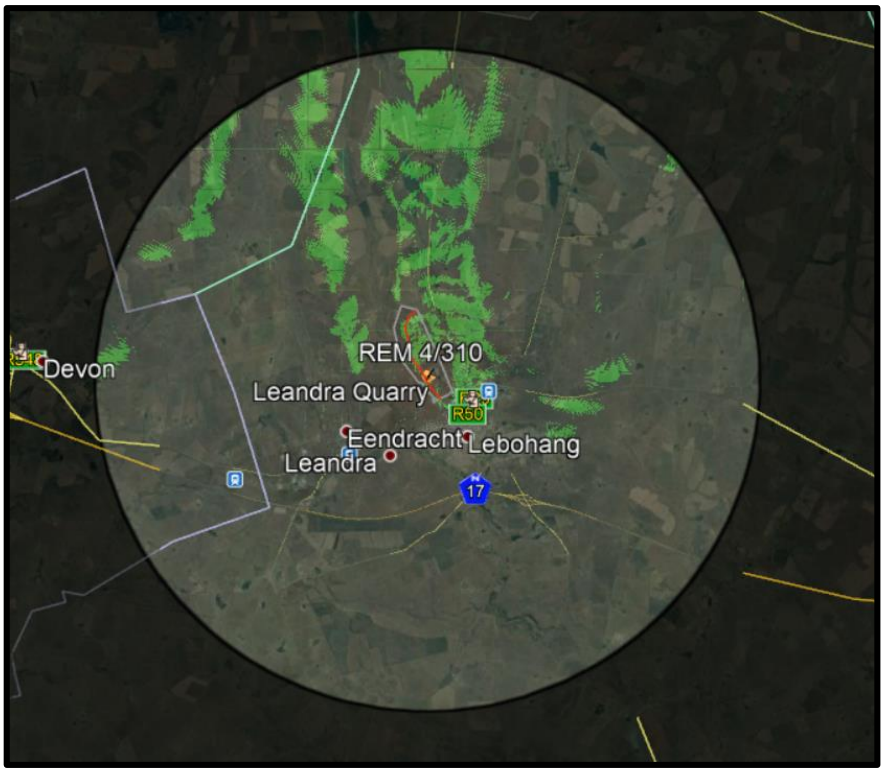

Figure 22: Viewshed of the proposed mining footprint where the green shaded areas shows the positions from where the mining area (Proposed mining area) will be visible. (Image obtained from Google Earth).

SITE SPECIFIC AIR AND NOISE QUALITY

The residential dwellings nearest to the proposed footprint is approximately 2 km away (south). Currently the air quality of the study area is mainly impacted on by the surrounding traffic on the R50 passing the site.

Emission into the atmosphere is controlled by the National Environmental Management: Air Quality Act, 2004. The proposed mining activity does not trigger an application in terms of the said act. The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures

proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area. The distance of the proposed mining area from residential infrastructure further lessens the potential noise impact.

SITE SPECIFIC GEOLOGY AND SOIL

The site specific geology is representative of the regional geology and soil as described earlier in this report. The geology of the study area comprises mostly Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types.

The aggregate / gravel of the study area is aggregate highly suitable for construction purposes. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to a processing area (inside mining boundary) where it will be crushed and screened to various sized stockpiles, before being sold and transported from site to clients.

SITE SPECIFIC HYDROLOGY

The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). As mentioned earlier, the proposed mining footprint extends into an area that has previously been used for mining, and all activities will take place by extending an existing mining area away from (in the opposite direction) of water bodies. No activities will take place within 50 m of a water body or the rechanneling of a water body. Any water required for the implementation of the project will be bought from a registered source and transported to on site.

Figure 23: Satellite view showing 1km radius from the position of mining footprint. (Image obtained from Google Earth)

SITE SPECIFIC MINING AND BIODIVERSITY CONSERVATION AREAS

As mentioned earlier, when the mining footprint is layered over the Mining and Biodiversity Map, it falls over and area of moderate biodiversity importance with a corresponding rating of moderate risk for mining. The Mining and Biodiversity Guideline's describes areas of moderate risk biodiversity importance as: "*These areas are of moderate biodiversity value."* The guideline notes that environmental screening, the EIA and specialists should focus on confirming the presence and significance of biodiversity features, and provide a site-specific basis on which to apply the mitigation hierarchy to inform regulatory decision-making.

SITE SPECIFIC GROUNDCOVER

The site specific groundcover of the mining area consists of low shrub land (purple area) as per the figure below the surrounding groundcover varies between bare none vegetated (white area) and woodland / open bush (green area)

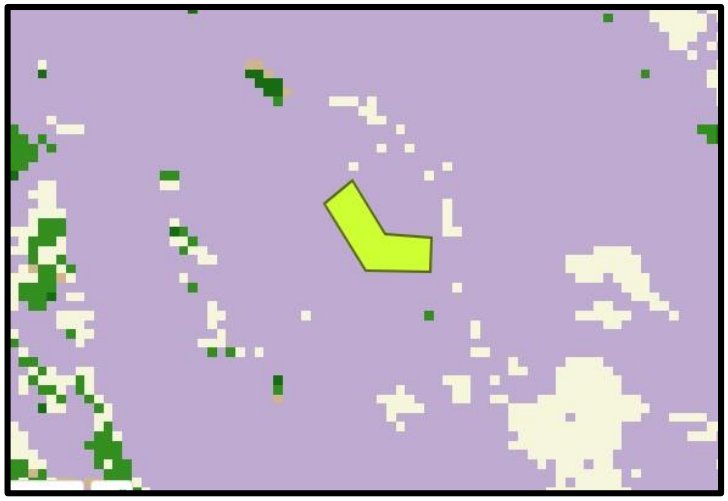

Figure 24: National land cover map showing the mining area (Image obtained from BGIS Map Viewer – National land cover Map 2014)

SITE SPECIFIC FAUNA

Various small mammals and reptiles occur are likely to on the property. The fauna at the site will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. The study area falls over a property that is noted to be operational game farms, should this mining permit be granted farm owner will be consulted prior to commencement of any activities to ensure that safety of animals and workers. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench. No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.

SITE SPECIFIC CULTURAL AND HERITAGE ENVIRONMENT

According to the Heritage Impact Assessment (see Appendix M), The study area is altered due to the development of a golf course, roads and an adjacent quarry, that would have obliterated surface indicators of heritage resources if any ever occurred in the study area. The study area is flat without focal points like natural pans or rocky outcrops that would have attracted human occupation in antiquity and is considered to be of low heritage potential. This was confirmed during the site visit when no heritage resources of significance were noted.

The impact of the proposed project on heritage resources low and it is recommended that the proposed project can commence on the condition that the recommendations (Section 10.1 see Appendix M) are implemented as part of the EMPr and based on approval from SAHRA the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases

Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.

If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository.

SITE SPECIFIC INFRASTRUCTURE

There following existing infrastructure located within 500 m of the proposed mining area includes:

- An existing Asphalt Plant is located 2km south west of the site.
- An existing quarry immediately extending into the application area.
- The R50 – 520 m towards the east of the site.

None of the above will be is likely to be effected Should all mitigation measures proposed in this document be strictly adhere to.

(d) Environmental and current land use map.
(Show all environmental and current land use features)

The environmental and current land use map is attached as Appendix D.

v) Impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts
(Provide a list of the potential impacts identified of the activities described in the initial site layout that will be undertaken, as informed by both the typical known impacts of such activities, and as informed by the consultations with affected parties together with the significance, probability, and duration of the impacts. Please indicate the extent to which they can be reversed, the extent to which they may cause irreplaceable loss of resources, and can be avoided, managed or mitigated.)

The following potential impacts were identified of each main activity in each phase of the proposed project. The significance rating was determined using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact rating listed below was determined for each impact **prior** to bringing the proposed mitigation

measures into consideration. The degree of mitigation indicates the possibility of partial, full or no mitigation of the identified impact.

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Alteration of the agricultural sense of place

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	2	1	1.6	4	5	4.5	**7.5**

Loss of agricultural land for duration of mining

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	4	1	2.3	5	5	5	**11.5**

Visual intrusion as a result of site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	2	2	2	5	5	5	**10**

Potential impact on fauna within the footprint area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	2	1	1.6	4	3	3.5	**5.6**

Potential impact on archaeological artefacts

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	5	5	4	1	1	1	**4**

New job opportunities as a result of the mining operation (Positive Impact)

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: High (+)			**Site Alternative 1**		**Degree of Mitigation: N/A**		
4	4	5	4.6	5	5	5	**23**

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:

Visual intrusion caused by mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	4	4	3.3	5	5	5	**16.5**

Loss of stockpiled topsoil during mining and stockpiling

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	3	3.5	**9.1**

Dust nuisance as a result of the disturbance of soil

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	3	2	2.3	4	4	4	**9.2**

Noise nuisance generated by earthmoving machinery

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
2	3	2	2.3	3	5	4	**9.2**

Infestation of the topsoil heaps and mining area with weeds or invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	2	3	5	2	3.5	**10.5**

Potential impact on local fauna due to disturbance and loss of available habitat

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	4	1	2.3	4	4	4	**9.2**

Potential erosion of denuded areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	3	1	2.3	4	2	3	**6.9**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	3	1	2.3	4	4	4	**9.2**

DRILLING AND BLASTING:

Health and safety risk posed by blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	1	3	4	3	3.5	**10.5**

Dust nuisance caused by blasting activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
3	4	2	3	4	3	3.5	**10.5**

Noise nuisance as a result of blasting

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
3	4	2	3	4	3	3.5	**10.5**

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

Dust nuisance due to excavation and from loading and vehicles transporting the material

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	4	2	2.6	4	5	4.5	**11.7**

Noise nuisance as a result of the mining activities

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
2	4	2	2.6	4	5	4.5	**11.7**

Unsafe working environment for employees

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	1	3	4	5	4.5	**13.5**

Soil contamination from hydrocarbon spills and/or littering

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	5	4.5	**11.7**

Potential impact on areas of palaeontological concern

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	5	4.3	2	1	1.5	**6.5**

Facilitation of erosion due to mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	3	3.5	**9.1**

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:

Dust nuisance generated at the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	4	2	2.6	5	5	5	**13**

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
2	4	2	2.6	4	5	4.5	**11.7**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	4	4	4	**10.4**

Overloading of trucks impacting road infrastructure

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	5	4	4	5	4.5	**18**

Degradation of the access road

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	2	3	4	5	4.5	**13.5**

CUMULATIVE IMPACTS:

Impact the broad-scale ecological processes

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
4	4	4	4	3	1	2	**8**

Impact on existing infrastructure as a direct result of the mining operation

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	5	4.3	3	3	3	**12.9**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	1	3	4	5	4.5	**13.5**

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	1	3	4	3	3.5	**10.5**

Infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	3	3.6	5	5	5	**18**

Potential impact associated with litter/waste left at the mining area

			Consequence			Likelihood	Significance
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	1	3	4	5	4.5	**10.5**

Return of the mining area to agricultural use upon closure (Positive Impact)

			Consequence			Likelihood	Significance (+)
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**		**Degree of Mitigation: N/A**		
3	5	1	3	5	5	5	**15**

vi) Methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;

(Describe how the significance, probability, and duration of the aforesaid identified impacts that were identified through the consultation process was determined in order to decide the extent to which the initial site layout needs revision.)

Methodology for the assessment of the potential environmental, social and cultural impacts

DEFINITIONS AND CONCEPTS:

Environmental significance:

The concept of significance is at the core of impact identification, evaluation and decision-making. The concept remains largely undefined and there is no international consensus on a single definition. The following common elements are recognised from the various interpretations:

- Environmental significance is a value judgement
- The degree of environmental significance depends on the nature of the impact
- The importance is rated in terms of both biophysical and socio-economic values
- Determining significance involves the amount of change to the environment perceived to be acceptable to affected communities.

Significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of acceptability) (DEAT (2002) Impact Significance, Integrated Environmental Management, Information Series 5).

The concept of risk has two dimensions, namely the consequence of an event or set of circumstances, and the likelihood of particular consequences being realised (Environment Australia (1999) Environmental Risk Management).

Impact

The positive or negative effects on human well-being and / or the environment.

Consequence

The intermediate or final outcome of an event or situation OR it is the result, on the environment, of an event.

Likelihood

A qualitative term covering both probability and frequency.

Frequency

The number of occurrences of a defined event in a given time or rate.

Probability

The likelihood of a specific outcome measured by the ratio of a specific outcome to the total number of possible outcomes.

Environment

Surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation (ISO 14004, 1996).

Methodology that will be used

The environmental significance assessment methodology is based on the following determination:

Environmental Significance = Overall Consequence X Overall Likelihood

Determination of Overall Consequence

Consequence analysis is a mixture of quantitative and qualitative information and the outcome can be positive or negative. Several factors can be used to determine consequence. For the purpose of determining the environmental significance in terms of consequence, the following factors were chosen: ***Severity/Intensity, Duration and Extent/Spatial Scale***. Each factor is assigned a rating of 1 to 5, as described in the tables below.

Determination of Severity / Intensity

Severity relates to the nature of the event, aspect or impact to the environment and describes how severe the aspects impact on the biophysical and socio-economic environment.

The table below will be used to obtain an overall rating for severity, taking into consideration the various criteria.

Table 12: Table to be used to obtain an overall rating of severity, taking into consideration the various criteria.

Type of criteria	Rating				
	1	2	3	4	5
Quantitative	0-20%	21-40%	41-60%	61-80%	81-100%

Qualitative	Insignificant / Non-harmful	Small / Potentially harmful	Significant/ Harmful	Great/ Very harmful	Disastrous Extremely harmful
Social/ Community response	Acceptable / I&AP satisfied	Slightly tolerable / Possible objections	Intolerable/ Sporadic complaints	Unacceptable / Widespread complaints	Totally unacceptable / Possible legal action
Irreversibility	Very low cost to mitigate/ High potential to mitigate impacts to level of insignificance/ Easily reversible	Low cost to mitigate	Substantial cost to mitigate/ Potential to mitigate impacts/ Potential to reverse impact	High cost to mitigate	Prohibitive cost to mitigate/ Little or no mechanism to mitigate impact Irreversible
Biophysical (Air quality, water quantity and quality, waste production, fauna and flora)	Insignificant change / deterioration or disturbance	Moderate change / deterioration or disturbance	Significant change / deterioration or disturbance	Very significant change / deterioration or disturbance	Disastrous change / deterioration or disturbance

Determination of Duration

Duration refers to the amount of time that the environment will be affected by the event, risk or impact, if no intervention e.g. remedial action takes place.

Table 13: Criteria for the rating of duration.

Rating	Description
1	Up to ONE MONTH
2	ONE MONTH to THREE MONTHS (QUARTER)
3	THREE MONTHS to ONE YEAR
4	ONE to TEN YEARS
5	Beyond TEN YEARS

Determination of Extent/Spatial Scale

Extent or spatial scale is the area affected by the event, aspect or impact.

Table 14: Criteria for the rating of extent / spatial scale.

Rating	Description
1	Immediate, fully contained area
2	Surrounding area
3	Within Business Unit area of responsibility
4	Within the farm/neighbouring farm area
5	Regional, National, International

Determination of Overall Consequence

Overall consequence is determined by adding the factors determined above and summarized below, and then dividing the sum by 3.

Table 15: Example of calculating overall consequence.

Consequence	Rating
Severity	Example 4
Duration	Example 2
Extent	Example 4
SUBTOTAL	**10**
TOTAL CONSEQUENCE: (Subtotal divided by 3)	**3.3**

Determination of Likelihood:

The determination of likelihood is a combination of Frequency and Probability. Each factor is assigned a rating of 1 to 5, as described below and in tables 6 and 7.

Determination of Frequency

Frequency refers to how often the specific activity, related to the event, aspect or impact, is undertaken.

Table 16: Criteria for the rating of frequency.

Rating	Description
1	Once a year or once/more during operation
2	Once/more in 6 Months
3	Once/more a Month
4	Once/more a Week
5	Daily

Determination of Probability

Probability refers to how often the activity or aspect has an impact on the environment.

Table 17: Criteria for the rating of probability.

Rating	Description
1	Almost never / almost impossible
2	Very seldom / highly unlikely
3	Infrequent / unlikely / seldom
4	Often / regularly / likely / possible
5	Daily / highly likely / definitely

Overall Likelihood

Overall likelihood is calculated by adding the factors determined above and summarised below, and then dividing the sum by 2.

Table 18: Example of calculating overall likelihood.

Consequence	Rating
Frequency	Example 4
Probability	Example 2
SUBTOTAL	**6**
TOTAL LIKELIHOOD (Subtotal divided by 2)	**3**

Determination of Overall Environmental Significance:

The multiplication of overall consequence with overall likelihood will provide the environmental significance, which is a number that will then fall into a range of **LOW**, **LOW-MEDIUM**, **MEDIUM**, **MEDIUM-HIGH** or **HIGH**, as shown in the table below.

Table 19: Determination of overall environmental significance.

Significance or Risk	Low	Low-Medium	Medium	Medium-High	High
Overall Consequence X Overall Likelihood	1 – 4.9	5 – 9.9	10 – 14.9	15 – 19.9	20 – 25

Qualitative description or magnitude of Environmental Significance

This description is qualitative and is an indication of the nature or magnitude of the Environmental Significance. It also guides the prioritisations and decision making process associated with this event, aspect or impact.

Table 20: Description of environmental significance and related action required.

Significance	Low	Low-Medium	Medium	Medium-High	High
Impact Magnitude	Impact is of very low order and therefore likely to have very little real effect. Acceptable.	Impact is of low order and therefore likely to have little real effect. Acceptable.	Impact is real, and potentially substantial in relation to other impacts. Can pose a risk to company	Impact is real and substantial in relation to other impacts. Pose a risk to the company. Unacceptable	Impact is of the highest order possible. Unacceptable. Fatal flaw.
Action Required	Maintain current management measures. Where possible improve.	Maintain current management measures. Implement monitoring and evaluate to determine potential increase in risk. Where possible improve	Implement monitoring. Investigate mitigation measures and improve management measures to reduce risk, where possible.	Improve management measures to reduce risk.	Implement significant mitigation measures or implement alternatives.

Based on the above, the significance rating scale has been determined as follows:

High Of the highest order possible within the bounds of impacts which could occur. In the case of negative impacts, there would be no possible mitigation and / or remedial activity to offset the impact at the spatial or time scale for

which it was predicted. In the case of positive impacts, there is no real alternative to achieving the benefit.

Medium-High	Impacts of a substantial order. In the case of negative impacts, mitigation and / or remedial activity would be feasible but difficult, expensive, time-consuming or some combination of these. In the case of positive impacts, other means of achieving this benefit would be feasible, but these would be more difficult, expensive, time-consuming or some combination of these.
Medium	Impact would be real but not substantial within the bounds of those, which could occur. In the case of negative impacts, mitigation and / or remedial activity would be both feasible and fairly easily possible, In case of positive impacts; other means of achieving these benefits would be about equal in time, cost and effort.
Low-Medium	Impact would be of a low order and with little real effect. In the case of negative impacts, mitigation and / or remedial activity would be either easily achieved of little would be required, or both. In case of positive impacts alternative means for achieving this benefit would likely be easier, cheaper, more effective, less time-consuming, or some combination of these.
Low	Impact would be negligible. In the case of negative impacts, almost no mitigation and or remedial activity would be needed, and any minor steps, which might be needed, would be easy, cheap and simple. In the case of positive impacts, alternative means would almost all likely be better, in one or a number of ways, than this means of achieving the benefit
Insignificant	There would be a no impact at all – not even a very low impact on the system or any of its parts.

vii) The positive and negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment and the community that may be affected.

(Provide a discussion in terms of advantages and disadvantages of the initial site layout compared to alternative layout options to accommodate concerns raised by affected parties)

The environmental impact assessment process assessed the feasibility of the proposed site alternative to identify fatal flaws that are deemed as severe as to prevent the activity continuing, or warrant another site or project alternative. The outcome of the assessment showed that should the mitigation measures and monitoring programmes proposed in this document be implemented, no fatal flaws could be identified that prevents the activity continuing. In light of the above, the mining proposal was updated to incorporate the project related mitigation measures and monitoring programmes identified during the assessment process. The preferred development footprint was subsequently finalized and is depicted on the attached site activities plan (Appendix C). The aggregate / gravel mining area can be moved to various alternative sites within close proximity of the proposed mining area but will

entail disturbing a greenfield area. However, the proposed mining area was identified as the preferred and only viable site alternative as it entails the mining of an area previously used for aggregate / gravel mining purposes. In light of this, S1 was identified during the assessment phase of the environmental impact assessment, by the Applicant and project team due to the following:

- The proposed area is over an undisturbed area of the farm occasionally used for grazing but with very low agricultural potential due to the rocky surface, after consultation with the land owner the application footprint extends into an area with low agricultural potential. The proposed project will not necessitate the loss of agricultural field with high potential to the land owner. This was deemed the only site alternative as this is the only area that will be viable for the land owner due to the low agricultural potential,
- Access to the proposed mining area is possible via the existing access road with a formal (existing) entrance onto the R50.
- The quality of the aggregate / gravel, in the earmarked area, complies with the requirements of the Applicant's clients and/or contracts.

PROJECT ASSOCIATED POSITIVE IMPACTS:

- Possible work opportunities to local residents;
- Return of the mining area to agricultural use upon closure of the project; and
- Diversification of the land use of the property.

POTENTIAL NEGATIVE IMPACTS:

Site establishment & infrastructure development

- Alteration of the agricultural sense of place;
- Loss of agricultural land for duration of mining;
- Visual intrusion as a result of site establishment;
- Potential impact on fauna within the footprint area;
- Potential impact on archaeological artefacts;

Stripping and stockpiling of topsoil and/or overburden:

- Visual intrusion caused by mining activities;
- Loss of stockpiled topsoil during mining and stockpiling;
- Dust nuisance as a result of the disturbance of soil;
- Noise nuisance generated by earthmoving machinery;
- Infestation of the topsoil heaps and mining area with weeds or invader plant species;
- Potential impact on local fauna due to disturbance and loss of available habitat;
- Potential erosion of denuded areas;
- Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages;

Drilling and blasting:

- Health and safety risk posed by blasting activities;
- Potential damage to the power line;
- Dust nuisance caused by blasting activities;
- Noise nuisance as a result of blasting;
- Potential impact on the shale mining- and brickworks infrastructure;

Excavation, loading and hauling to the processing plant:

- Dust nuisance due to excavation and from loading and vehicles transporting the material;
- Noise nuisance as a result of the mining activities;
- Unsafe working environment for employees;
- Soil contamination from hydrocarbon spills and/or littering;
- Potential impact on areas of palaeontological concern;
- Facilitation of erosion due to mining activities;

Processing, stockpiling and transporting of material:

- Dust nuisance generated at the processing plant;
- Noise nuisance stemming from operation of the processing plant;
- Potential contamination of environment due to improper waste management;
- Overloading of trucks impacting road infrastructure;
- Degradation of the access road;

Cumulative impacts:

- Impact the broad-scale ecological processes;
- Impact on existing infrastructure as a direct result of the mining operation;

Sloping and landscaping during rehabilitation:

- Safety risk posed by un-sloped areas;
- Erosion of returned topsoil after rehabilitation;
- Infestation of the reinstated areas by weeds and invader plant species;
- Potential impact associated with litter/waste left at the mining area.

viii) The possible mitigation measures that could be applied and the level of risk

(With regard to the issues and concerns raised by affected parties provide a list of the issues raised and an assessment/discussion of the mitigation or site layout alternatives available to accommodate or address their concerns, together with an assessment of the impacts or risks associated with the mitigation or alternatives considered)

The following mitigation measures are proposed to address/minimize the impact of the proposed activity on the surrounding environment:

TOPOGRAPHY

Rehabilitating/Landscaping of Mining Area:

- The excavated area must serve as a final depositing area for the placement of overburden.
- Rocks and coarse material removed from the excavation must be dumped into the excavation.
- Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.
- Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.
- No waste may be permitted to be deposited in the excavations.
- Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
- The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.
- On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002).
- On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

VISUAL CHARACTERISTICS

Visual Mitigation:

- The site must have a neat appearance and be kept in good condition at all times.
- Mining equipment must be stored neatly in dedicated areas when not in use.
- The permit holder must limit vegetation removal, and stripping of topsoil may only be done immediately prior to the mining/use of a specific area.
- The excavation must be contained within the approved footprint of the permitted area.
- Upon closure the site must be rehabilitated to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.

AIR AND NOISE QUALITY

Fugitive Dust Emission Mitigation Measures:

- The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products).
- The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.
- Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust.
- Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.
- The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts.
- Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end.
- Compacted dust must weekly be removed from the crusher plant to eliminate the dust source.
- Loads must be flattened to prevent spillage during transportation on public roads.
- Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts.
- All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).
- Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.

Noise Handling:

- The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site.
- No loud music may be permitted at the mining area.
- All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. Surrounding land owners must be notified in writing prior to each blasting occasion.
- A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must

be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.

- Site management must strive to minimise the noise caused by generators. All generators must be maintained and equipped with sound mufflers. If possible the generators must be positioned towards the western part of the mining area (S1) as this will point it away from the neighbouring land users. Further to this, all generators must be placed on a level area/footing to minimise vibration noise.
- Best practice measures shall be implemented in order to minimize potential noise impacts.

GEOLOGY AND SOIL

Topsoil Management:

- The upper 300 mm of the soil must be stripped and stockpiled before mining.
- Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes.
- Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time.
- The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas.
- Topsoil stockpiles must be protected against losses by water- and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.
- Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.
- The temporary topsoil stockpiles must be kept free of invasive plant species.
- Topsoil heaps to be stored longer than a period of 6 months needs to be vegetated with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season.
- Storm- and runoff water must be diverted around the stockpile area to prevent erosion.
- The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site.
- The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal.

- A cover crop must be planted and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established.
- Run-off water must be controlled via temporary berms, where necessary, on the slopes to ensure that accumulation of run-off does not cause down-slope erosion.
- The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.

HYDROLOGY

Erosion Control and Storm Water Management:

- Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place.
- Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion.
- Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms.
- When mining within steep slopes, it must be ensured that adequate slope protection is provided.
- During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur.
- Roads and other disturbed areas within the project area must be regularly monitored for erosion and problem areas must receive follow-up monitoring to assess the success of the remediation.
- Any erosion problems within the mining area as a result of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur.
- Silt/sediment traps/barriers must be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. These sediment/silt barriers must regularly be maintained and cleared so as to ensure effective drainage of the areas.
- Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose:

- Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems.
- Dirty water must be collected and contained in a system separate from the clean water system.
- Dirty water must be prevented from spilling or seeping into clean water systems.
- A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns).
- The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.

- Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site.
- All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.

TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER

Management of Vegetation Removal:

- The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly.
- A pre-commencement walk-through of the final mining footprint, must be done by a suitably qualified botanist to identify species of conservation concern that need to be removed/relocated prior to bush clearance.
- Permits for the removal of protected plant species (if required) must be obtained and kept on-site in the possession (at all times) of the flora search and rescue team.
- A pre-commencement environmental induction for all site staff must be provided to ensure that basic environmental principles are adhered to. This includes awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards, minimising wildlife interactions, remaining within demarcated construction areas, etc.

- Bush-clearance may only commence once the recommendations of the specialist (pre-commencement walkthrough) have been implemented.
- Cleared vegetation to be retained at any time may not be burned, but can be mulched and stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes.
- The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place.
- All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed.
- No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits.
- No fires must be allowed on-site.
- If deemed necessary by the ECO, a firebreak must be made around the periphery of the site in autumn every year. Vegetated areas inside the break should be burned (upon recommendation of the ECO) on a biennial basis if deemed necessary. The relevant veld burning legislation must be adhered to.

Management of Invasive Plant Species:

- An invasive plant species management plan (Appendix K) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities.
- No planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose may be allowed.
- All stockpiles (topsoil & overburden) must be kept free of invasive plant species.
- Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used:
  - The plants can be uprooted, felled or cut off and can be destroyed completely.
  - The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.

FAUNA

Protection of Fauna:

- The site manager must ensure no fauna is caught, killed, harmed, sold or played with.

- Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.
- All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area.
- No snares may be set or nests raided for eggs or young.
- All vehicles must adhere to a low speed limit (40 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.
- No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp.
- No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.

CULTURAL AND HERITAGE ENVIRONMENT

Archaeological, Heritage and Palaeontological Aspects:

- Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.

- All mining must be confined to the development footprint area.
- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.
- The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA.
- Work may only continue once the go-ahead was issued by SAHRA.
- If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist, and then housed in a recognised repository.

LAND USE

Loss of agricultural land for duration of mining:

- The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed, mined-out/rehabilitated areas could revert back to agricultural use once the cover crop stabilised.

Management of the Access Road:

- Storm water must be diverted around the access road to prevent erosion.
- Vehicular movement must be restricted to the existing access road and crisscrossing of tracks through undisturbed areas must be prohibited.
- Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.
- Overloading of the trucks must be prevented and proof of load weights must be filed and be available for auditing by relevant officials.
- The speed of all mining equipment/vehicles must be restricted to 40 km/h on the access roads.

GENERAL

Waste Management:

- Regular vehicle maintenance, repairs and services may only take place at the workshop and service area. If emergency repairs are needed on equipment not able to move to the workshop, drip trays must be present. All waste products must be disposed of in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. This waste must be treated as hazardous waste and must be disposed of at a registered hazardous waste handling facility, alternatively collected by a registered hazardous waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling.
- Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. The dirty rags used to clean the drip trays must be disposed as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system.
- Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof of safe disposal must be filed for auditing purposes.

- An oil spill kit must be obtained, and the employees must be trained in the emergency procedures to follow when a spill occurs as well as the application of the spill kit.
- Spills must be cleaned up immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. Proof must be filed.
- Suitable covered receptacles must be available at all times and conveniently placed for the disposal of general waste.
- Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., must be stored in a container with a closable lid at a collecting point to be collected at least once a month and disposed of at a recognized landfill site. Specific precautions must be taken to prevent refuse from being dumped on or in the vicinity of the mine area. Proof of disposal must be available for auditing purposes. The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must be disposed of at a waste disposal facility licensed to accept such waste or recycled or treated at a licensed waste treatment facility." the third party collecting the waste must be licensed or accredited for waste collection.
- Biodegradable refuse must be handled as indicated above.
- Re-use or recycling of waste products must be encouraged on site.
- No waste may be buried or burned on the site.
- Ablution facilities must be provided in the form of a chemical toilet/s. The chemical toilet must be anchored (to prevent blowing/falling over) and shall be serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. The safe disposal certificates must be filed for auditing purposes.
- The use of any temporary, chemical toilet facilities must not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.
- When small volumes of wastewater are generated during the life of the mine the following is applicable:
  - Water containing waste must not be discharged into the natural environment.
  - Measures to contain the waste water and safely dispose thereof must be implemented.
- It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.
- Site management must implement the use of waste registers to keep record of the waste generated and removed from the mining area.

Storage/Handling of Hazardous Substances/Chemicals:

- Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product.
- The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water.
- Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member.
- A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site.
- Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.
- The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.
- The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water, and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility.
- Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not be stored on bare soil. The waste water originating from the cleaning of drip trays must be discarded into the oil sump.

Management of health and safety risks:

- Workers must have access to the correct personal protection equipment (PPE) as required by law.
- Sanitary facilities must be located within 100 m from any point of work.
- All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).
- The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity.
- The surrounding landowners must be informed in writing ahead of each blasting event.

- The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event.
- A vibro recorder must be used to record all blasts.
- Audible warning of a pending blast must be given at least 3 minutes in advance of the blast.
- Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.

ix) Motivation where no alternative sites were considered.

As mentioned previously, the proposed mining area was identified as the preferred and only viable site alternative as it entails the mining of an area previously used for gravel mining purposes, the gravel mining area can be moved to various alternative sites within close proximity of the proposed mining area but will entail disturbing a greenfield area. However, the proposed mining area, as indicated on the Regulation 2.2 Mine Plan (attached as Appendix A), was identified as the preferred and only viable site alternative as it entails the mining of an area previously used for gravel mining purposes, and the use of the existing access road and entrance to the site. In light of this, no alternative sites were considered during this assessment.

Site Alternative 2:

Site Alternative 2 (S2) was assessed for the proposed mining but found not environmentally and practically suitable. The earmarked area is also a greenfield site that will have a higher visual impact to be disturbed for the quarry to be established. Site alternative 1, was deemed the only site alternative as this is the only area that will be viable for the land owner due to the low agricultural potential.

In light of this, no alternative sites were considered during this assessment.

x) Statement motivating the alternative development location within the overall site.
(Provide a statement motivating the final site layout that is proposed)

Site Alternative 1 was identified during the assessment phase of the environmental impact assessment as the preferred and only site alternative. The following matters contributed to the identification of the preferred development footprint:

1. **Topography** –The natural topography of the area surrounding the proposed aggregate / gravel mine is best described as gently to moderately undulating landscape on the Highveld plateau. Altitude 1 420–1 760. The figure below shows the elevation loss from the proposed mining footprint to the town of Leandra to be 0 m over 500 m.

2. **Visual Characteristics** – The viewshed analysis showed that the visual impact of the proposed aggregate / gravel mining operation will be of low significance. The small scale of the proposed operation, and the mining area will be located between two hills in order to minimize the visual impact. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

3. **Air and Noise Quality** – The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use. The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area.

4. **Geology and Soil –** The site specific geology is representative of the regional geology and soil as described earlier in this report. The geology of the study area comprises mostly shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types.

5. **Mining, Biodiversity and Groundcover –** Ground-truthhing by the specialists showed that in terms of local-level biodiversity, the site is not exceptional and the site is not highly sensitive in this regard, as there are no Species of Conservation Concern or unique and range restricted species present within the proposed mining as well as no unique habitats which are not widely available in the wider landscape. As a result, the majority of impacts associated with the development of the site are likely to be local in nature and not of wider significance.

6. **Fauna -** No protected or red data species were identified to be resident within the proposed footprint area. Various small mammals and reptiles occur on the property. Larger herbivore species are very scares or absent due to the conflicting land use. The fauna at the site will not be impacted by the proposed mining activity as they will be able to move away or through the site, without being harmed. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations must not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed must contain soil ramps allowing fauna to escape the

trench. No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.

7. **Cultural and Heritage Environment** - According to the Heritage Impact Assessment (see Appendix M), The study area is altered due to the development of a golf course, roads and an adjacent quarry, that would have obliterated surface indicators of heritage resources if any ever occurred in the study area. The study area is flat without focal points like natural pans or rocky outcrops that would have attracted human occupation in antiquity and is considered to be of low heritage potential. This was confirmed during the site visit when no heritage resources of significance were noted.

   The impact of the proposed project on heritage resources low and it is recommended that the proposed project can commence on the condition that the recommendations (Section 10.1 see Appendix M) are implemented as part of the EMPr and based on approval from SAHRA the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases

   Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.

   If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository.

8. **Site Specific Infrastructure** – There following existing infrastructure located within 500 m of the proposed mining area includes:

   - An existing Asphalt Plant is located 2km south west of the site.
   - An existing quarry immediately extending into the application area.
   - The R50 – 520 m towards the east of the site.

     None of the above will be is likely to be effected should all mitigation measures proposed in this document be strictly adhere to.

i) Full description of the process undertaken to identify, assess and rank the impacts and risks the activity will impose on the preferred site (In respect of the final site layout plan) through the life of the activity.

(Including (i) a description of all environmental issues and risks that were identified during the environmental impact assessment process and (ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures)

During the impact assessment process the following potential impacts were identified of each main activity in each phase. An initial significance rating (listed under *v) Impacts and Risks Identified*) was determined for each potential impact should the mitigation measures proposed in this document not be implemented on-site. The impact assessment process then continued in identifying mitigation measures to address the impact that the proposed mining activity may have on the surrounding environment.

The significance rating was again determined for each impact using the methodology as explained under *vi) Methodology Used in Determining and Ranking the Significance*. The impact ratings listed below was determined for each impact **after** bringing the proposed mitigation measures into consideration and therefore represents the final layout/activity proposal.

SITE ESTABLISHMENT & INFRASTRUCTURE DEVELOPMENT:

Alteration of the agricultural sense of place

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	2	1	1.6	4	5	4.5	**7.5**

Loss of agricultural land for duration of mining

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	4	1	2.3	5	5	5	**11.5**

Visual intrusion as a result of site establishment

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
2	1	2	1.6	5	5	5	**8**

Potential impact on fauna within the footprint area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
1	2	1	1.3	2	2	2	**2.6**

Potential impact on archaeological artefacts

			Consequence			Likelihood	**Significance**

Severity	Duration	Extent		Probability	Frequency		
Rating: Low			**Site Alternative 1**		**Degree of Mitigation: Full**		
1	5	1	2.3	1	1	1	**2.3**

New job opportunities as a result of the mining operation (Positive Impact)

Severity (+)	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance (+)
Rating: High (+)			**Site Alternative 1**		**Degree of Mitigation: N/A**		
4	4	5	4.6	5	5	5	**23**

STRIPPING AND STOCKPILING OF TOPSOIL AND/OR OVERBURDEN:

Visual intrusion caused by mining activities

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
2	4	4	3.3	5	5	5	**16.5**

Loss of stockpiled topsoil during mining and stockpiling

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	2	2	2	**5.2**

Dust nuisance as a result of the disturbance of soil

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	3	2	2.3	3	4	3.5	**8**

Noise nuisance generated by earthmoving machinery

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
2	3	2	2.3	3	4	3.5	**8**

Infestation of the topsoil heaps and mining area with weeds or invader plant species

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	2	3	4	2	3	**9**

Potential impact on local fauna due to disturbance and loss of available habitat

Severity	Duration	Extent	Consequence	Probability	Frequency	Likelihood	Significance
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	4	1	2.3	2	2	2	**4.6**

Potential erosion of denuded areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	3	1	2.3	2	2	2	**4.6**

Potential contamination of footprint area and surface runoff as a result of hydrocarbon spillages

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	3	1	2.3	2	2	2	**4.6**

DRILLING AND BLASTING:

Health and safety risk posed by blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	1	3	2	2	2	**6**

Dust nuisance caused by blasting activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: None**		
3	4	2	3	2	2	2	**6**

Noise nuisance as a result of blasting

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
3	4	2	3	2	3	2.5	**7.5**

EXCAVATION, LOADING AND HAULING TO THE PROCESSING PLANT

Dust nuisance due to excavation and from loading and vehicles transporting the material

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	4	2	2.6	3	4	3.5	**9.1**

Noise nuisance as a result of the mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
2	4	2	2.6	3	4	3.5	**9.1**

Unsafe working environment for employees

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	1	3	2	2	2	**6**

Soil contamination from hydrocarbon spills and/or littering

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	2	2	2	**5.2**

Potential impact on areas of palaeontological concern

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	5	4.3	2	1	1.5	**6.5**

Facilitation of erosion due to mining activities

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	1	1	1	**2.6**

PROCESSING, STOCKPILING AND TRANSPORTING OF MATERIAL:

Dust nuisance generated at the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
2	4	2	2.6	4	3	3.5	**9.1**

Noise nuisance stemming from operation of the processing plant

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
2	4	2	2.6	4	3	3.5	**9.1**

Potential contamination of environment due to improper waste management

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	1	2.6	2	2	2.5	**6.5**

Overloading of trucks impacting road infrastructure

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	5	4	2	2	2	**8**

Degradation of the access road

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	4	2	3	2	2	2	**6**

CUMULATIVE IMPACTS:

Impact the broad-scale ecological processes

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Low-Medium			**Site Alternative 1**		**Degree of Mitigation: Partial**		
4	4	4	4	2	1	1.5	**6**

Impact on existing infrastructure as a direct result of the mining operation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
4	4	5	4.3	1	1	1	**4.3**

SLOPING AND LANDSCAPING DURING REHABILITATION:

Safety risk posed by un-sloped areas

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	1	3	2	1	1.5	**4.5**

Erosion of returned topsoil after rehabilitation

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	1	3	3	3	3	**9**

Infestation of the reinstated areas by weeds and invader plant species

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	3	3.6	3	3	3	**10.8**

Potential impact associated with litter/waste left at the mining area

			Consequence			Likelihood	**Significance**
Severity	Duration	Extent		Probability	Frequency		
Rating: Medium			**Site Alternative 1**		**Degree of Mitigation: Full**		
3	5	1	3	1	1	1	**3**

Return of the mining area to agricultural use upon closure (Positive Impact)

			Consequence			Likelihood	**Significance (+)**
Severity (+)	Duration	Extent		Probability	Frequency		
Rating: Medium-High			**Site Alternative 1**		**Degree of Mitigation: N/A**		
3	5	1	3	5	5	5	**15**

j) Assessment of each identified potentially significant impact and risk

(This section of the report must consider all the known typical impacts of each of the activities (including those that could or should have been identified by knowledgeable persons and not only those that were raised by registered interested and affected parties).

Table 21: Assessment of each identified potentially significant impact and risk

ACTIVITY Whether listed or not listed. (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc…etc…etc.)	POTENTIAL IMPACT (E.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, air pollution, etc…etc…etc.)	ASPECTS AFFECTED	PHASE In which impact is anticipated. (E.g. Construction, commissioning, operational Decommissioning closure, post closure.)	SIGNIFICANCE If not mitigated.	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc etc) E.g. Modify through alternative method Control through noise control Control through management and monitoring through rehabilitation.	SIGNIFICANCE If mitigated.
• Demarcation of site with visible beacons.	• No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment & Operational Phase	• Low-Medium	<u>Control:</u> Implementing proper housekeeping.	• Low-Medium
• Site establishment and infrastructure development**.**	• Alteration of the agricultural sense of place.	The impact may affect the agricultural opportunities of the property.	Site Establishment- and Decommissioning phase	• Low-Medium	<u>Control & Remedy:</u> Proper housekeeping and storm water management.	• Low-Medium
• Site establishment and infrastructure development**.**	• Loss of agricultural land for duration of mining.	The impact may affect the agricultural opportunities of the property.	Site Establishment-, Operational- and Decommissioning phase	• Medium • Medium	<u>Control:</u> Implementing soil- and storm water management.	• Medium • Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
				• Medium		• Low
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Visual intrusion as a result of site establishment. • Visual intrusion caused by mining activities.	The visual impact may affect the aesthetics of the landscape.	Site Establishment- and Operational phase	• Medium • Medium - High	Control & Stop: Implementing good management practices.	• Medium • Medium - High
• Site establishment and infrastructure development.	• Potential impact on vegetation and listed and/or protected plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low-Medium • Low	Control: Noise suppression methods and proper housekeeping.	• Low • Low
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Potential impact on fauna within the footprint area. • Potential impact on local fauna due to distrubance and loss of available habitat.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low-Medium • Low-Medium • Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low • Low • Low
• Site establishment and infrastructure development • Stripping and stockpiling of topsoil and overburden. • Excavation, Loading and Hauling to the processing plant	• Dust nuisance due to excavation and from loading and vehicles transporting the material	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low - Medium • Medium • Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - medium • Low - medium • Low - medium
	• Noise nuisance as a result of the mining activities	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low - Medium • Medium • Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - medium • Low - medium • Low - medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
	• Unsafe working environment for employees	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Medium • Medium • Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - medium • Low - medium • Low - medium
	• Soil contamination from hydrocarbon spills and/or littering	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	• Low - Medium • Low - Medium • Low - Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - medium • Low - medium • Low - medium
• Site establishment and infrastructure development. • Excavation, loading and hauling to the processing plant.	• Potential impact on archaeological artefacts. • Potential impact on areas of palaeontological concerns.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	• Low	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	• Low
• Drilling and Blasting	• Health and safety risk posed by blasting activities	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - Medium
	• Dust nuisance caused by blasting activities	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - Medium
	• Noise nuisance as a result of blasting	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan.	• Low - Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
• Site establishment and infrastructure development.	• New job opportunities as a result of the mining operation (+)	Contribution to the socio-economic status of the area.	Operational Phase	• Medium-High	Control: Proper site management.	• Medium-High
• Processing, Stockpiling and transporting of material	• Dust nuisance generated at the processing plant	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low-Medium
	• Noise nuisance stemming from operation of the processing plant	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low-Medium
	• Potential contamination of environment due to improper waste management	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low-Medium
	• Overloading of trucks impacting road infrastructure	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium - High	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low-Medium
	• Degradation of the access road	This will impact on the biodiversity of the receiving environment	Operational Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low-Medium

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	SIGNIFICANCE	MITIGATION TYPE	SIGNIFICANCE
• Sloping and landscaping during rehabilitaition	• Safety risk posed by un-sloped areas	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management.	• Low
	• Erosion of returned topsoil after rehabilitation	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	• Low
	• Infestation of the reinstated areas by weeds and invader plant species	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	• Medium - High	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	• Medium
	• Potential impact associated with litter/waste left at the mining area	This will impact on the biodiversity of the receiving environment	Decommissioning Phase	• Medium	Control & Remedy: Proper housekeeping and implementation of an emergency response plan and waste management plan and Proper site management	• Low

The supporting impact assessment conducted by the EAP must be attached as an appendix, marked Appendix H

k) Summary of specialist reports.

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

Table 22: Summary of specialist reports

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
The screening report for an environmental authorisation, as required in terms of the 2014 NEMA EIA Regulations of a portion of Portion 4 of the Remaining Extent of the farm Brakfontein 310, in the Highveld Ridge magisterial district of the Mpumalanga Province. The report identified the following list of specialist assessment for inclusion in the assessment report: • Agricultural Impact Assessment; • Archaeological and Cultural Heritage Impact Assessment; • Paleontology Impact Assessment; • Terrestrial Biodiversity Impact Assessment; • Aquatic Biodiversity Impact Assessment; • Hydrology Assessment; • Noise Impact Assessment; • Radioactivity Impact Assessment; • Traffic Impact Assessment; • Geotechnical Assessment; • Socio-economic Assessment; • Plant Species Assessment; • Animal Species Assessment.			

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED

Inzalo Crushing and Aggregates (Pty) Ltd appointed Greenmined Environmental (Pty) Ltd as the environmental impact assessment practitioner (EAP) to undertake the EIA associated with the mining permit application. In light of this Greenmined would like to respond as follows to the list of required specialist studies:

- Agricultural Impact Assessment (AIA):

Portion 4 of the Remaining Extent of the farm Brakfontein 310, in the Highveld Ridge magisterial district of the Mpumalanga Province is currently used as an existing quarry. The agricultural potential of the farm will be assessed as part of the EIA, however, Greenmined is of the opinion that a specialist AIA is not needed as the application footprint extends into an area previously used for mining purposes. The proposed project will not necessitate the loss of any agricultural field, center pivot or similarly operated agricultural area.

- Archaeological and Cultural Heritage Impact Assessment (HIA) & Paleontology Impact Assessment (PIA):

According to the Heritage Impact Assessment (see Appendix M), The study area is altered due to the development of a golf course, roads and an adjacent quarry, that would have obliterated surface indicators of heritage resources if any ever occurred in the study area. The study area is flat without focal points like natural pans or rocky outcrops that would have attracted human occupation in antiquity and is considered to be of low heritage potential. This was confirmed during the site visit when no heritage resources of significance were noted.

The impact of the proposed project on heritage resources low and it is recommended that the proposed project can commence on the condition that the recommendations (Section 10.1 see Appendix M) are implemented as part of the EMPr and based on approval from SAHRA the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases

Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.

If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository.

- Terrestrial Biodiversity Impact Assessment (TBIA) & Plant Species Assessment (PSA) & Animal Species Assessment (ASA):

As mentioned earlier, the proposed mining footprint extends into an area that has previously been used for mining. No protected or red data animal or plant species were identified during the site inspection, and no fauna will be impacted by the proposed prospecting as they will be able to move away or through the site without being harmed. It is proposed that should the Applicant

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED

implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the riparian vegetation, groundcover and/or fauna is deemed to be of low significance. No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan. Therefore, in light of the site-specific state of the earmarked area there is no need for a TBIA, PSA or ASA.

- Aquatic Biodiversity Impact Assessment (ABIA) & Hydrology Assessment (HA):

The proposed project does not require a Water Use Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No 36 of 1998). As mentioned earlier, the proposed mining footprint extends into an area that has previously been used for mining, and no activity will take place in any water bodies.

- Noise Impact Assessment (NIA):

The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the machinery already operational at the property. Due to the small scale of the operation a NIA is not deemed applicable.

- Radioactivity Impact Assessment

A radioactivity impact assessment is not deemed necessary for the proposed sand mining operation that will not store any chemicals on site, perform activities of radioactive nature or generate hazardous waste of radioactive nature.

- Traffic Impact Assessment (TIA):

The Applicant will use the existing road to access the mining area and transport material from the mine. The existing road has a formal entrance and was also used by the previous permit holder to transport material. No upgrading of the road is needed prior to commencement. In light of the small scale of the proposed operation a TIA is not deemed necessary, should the Applicant implement the mitigation measures to be proposed in the EMPR.

- Geotechnical Assessment:

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with X if applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED
No reason for a geotechnical assessment could be identified as no permanent infrastructure will be established at the proposed mining area, and mining will not create a deep void with high faces. - Socio-economic Assessment (SEA): The material to be sourced from the mining area will be used for the upgrading of the road infrastructure in the vicinity of the site. The proposed mine will be operated on an area previously used for mining. Should any additional workers to be required on this mining activity they will be sourced from the local community. Workers will daily be transported to the site. The establishment of the mining area on the farm will also assist the property owner in the diversification of their income. In light of this a SEA is not deemed applicable to this project. In light of the above mentioned, we propose that the no specialist studies are currently deemed applicable to the proposed mining operation.			

l) Environmental impact statement

i) Summary of the key findings of the environmental impact assessment;

The key findings of the environmental impact assessment entail the following:

Project Proposal

Inzalo Crushing and Aggregates (Pty) Ltd applied for authorisation to mine gravel from a 4.9 ha area over an area that has been mined for numerous years. The mining method will make use of blasting in order to loosen the hard rock; the material will then be loaded and hauled to the crushing plant where it will be screened to various sized stockpiles. The aggregate will be stockpiled until it is transported from site using tipper trucks. All mining related activities will be contained within the approved mining permit boundaries.

Topography

The natural topography of the area surrounding the proposed aggregate / gravel mine is best described as gently to moderately undulating landscape on the Highveld plateau. Altitude 1 420–1 760. The figure below shows the elevation loss from the proposed mining footprint to the town of Leandra to be 0 m over 500 m.

Visual Characteristics

The viewshed analysis showed that the visual impact of the proposed aggregate / gravel mining operation will be of low significance. The project area is located in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. The proposed mining area will be reached via the existing access road to the quarry which is currently in extremely bad visual state.

Ground-truthing showed that the proposed footprint of the mining area is extremely disturbed. The Applicant will make use of the existing access point to the mining area. Should the Applicant implement the mitigation measures proposed in the EMPr and successfully rehabilitate the mining area (upon closure) the impact of the proposed activity on the visual characteristics in general is only deemed to improve and no residual visual impact is expected upon closure of the mine.

Air and Noise Quality

The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use. The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area.

Geology and Soil

The geology of the study area comprises mostly Shale, sandstone or mudstone of the Madzaringwe Formation (Karoo Supergroup) or the intrusive Karoo Suite dolerites which feature prominently in the area. In the south, the Volksrust Formation (Karoo Supergroup) is found and in the west, the rocks of the older Transvaal, Ventersdorp and Witwatersrand Supergroups are most significant. Soils are deep, reddish on flat plains and are typically Ea, Ba and Bb land types.

The gravel of the study area is aggregate highly suitable for construction purposes. The mining method will make use of blasting in order to loosen the hard rock; upon which the loosened material will be transported to a processing area (inside mining boundary) where it will be crushed and screened to various sized stockpiles, before being sold and transported from site to clients.

Mining, Biodiversity and Groundcover

Ground-truth showed that the proposed footprint of the mining area is extremely disturbed. The Applicant will make use of the existing access point to the mining area. It is proposed that should the Applicant implement the mitigation measures proposed in the EMPr the impact of the proposed activity on the vegetation and groundcover in general is deemed to be of low significance.

Fauna

The project area is located in the jurisdiction of the Govan Mbeki Local Municipality, with Leandra being the nearest town. The land use of the earmarked property was previously used for mining dolerite, thus its already a disturbed area. The surrounding properties are mainly used for a variety of mixed agricultural purposes as well as mining and industrial purposes. Various small mammals and reptiles occur are likely

to on the property. The fauna at the site will not be impacted by the proposed mining activities as they will be able to move away or through the site, without being harmed. Workers should be educated and managed to ensure that no fauna at the site is harmed. At this stage no resident protected or red data faunal species could be identified within the earmarked footprint. Workers will be informed and managed to ensure that no fauna at the site is harmed. No poaching or hunting of animals will be allowed. All construction vehicles must adhere to a low speed limit (<40km/h) to avoid collisions with susceptible species such as snakes and tortoises. Trenches and deep excavations should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are exposed should contain soil ramps allowing fauna to escape the trench. No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.

Cultural and Heritage Environment

According to the Heritage Impact Assessment (see Appendix M), The study area is altered due to the development of a golf course, roads and an adjacent quarry, that would have obliterated surface indicators of heritage resources if any ever occurred in the study area. The study area is flat without focal points like natural pans or rocky outcrops that would have attracted human occupation in antiquity and is considered to be of low heritage potential. This was confirmed during the site visit when no heritage resources of significance were noted.

The impact of the proposed project on heritage resources low and it is recommended that the proposed project can commence on the condition that the recommendations (Section 10.1 see Appendix M) are implemented as part of the EMPr and based on approval from SAHRA the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases

Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains. If

fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository.

Site Specific Infrastructure

There following existing infrastructure located within 500 m of the proposed mining area includes:

- An existing Asphalt Plant is located 2km south west of the site.
- An existing quarry immediately extending into the application area.
- The R50 – 520 m towards the east of the site.

None of the above will be is likely to be effected should all mitigation measures proposed in this document be strictly adhere to.

ii) Final Site Map

Provide a map at an appropriate scale which superimposes the proposed overall activity and its associated structure and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. Attach as Appendix.

See the map indicating site activities attached as Appendix C.

iii) Summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;

The positive impacts associated with the project include:

- Possible work opportunities to local residents;
- Return of the mining area to agricultural use upon closure of the project; and
- Diversification of the land use of the property.

The negative impacts associated with the project that was deemed to have a Low-Medium or higher significance includes:

- Visual intrusion as a result of site establishment **Low-Medium**
- Overloading of trucks having an impact on the public roads **Low-Medium**

m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPr;

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as condition of authorisation.

Table 23: Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
TOPOGRAPHY Landscaping of Mining Area	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Use the excavated area for the final depositing of overburden. • Dump rocks and coarse material removed from the excavation into the excavation. • Remove coarse natural material used for the construction of ramps and dump it into the excavations. • Remove stockpiles during the decommissioning phase, rip the area and return the topsoil to its original depth to provide a growth medium. • Do not permit any waste to be deposited into the excavations. • Return the previously stored topsoil to its original depth, once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures. • If necessary, fertilize the area to allow vegetation to establish rapidly. Seed the site with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. • If required by the Regional Manager (DMRE) the soil must be analysed and any deleterious effects on the	• Effectively restoring the mined area to allow the return of land use to agricultural purposes.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		soil arising from the mining operation must be corrected and the area be seeded with a vegetation seed mix to his/her specification. • On completion of operations, deal with all structures or objects in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). On completion of mining operations, scarify the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, to a depth of at least 200mm and graded it to an even surface condition. Where applicable/possible return topsoil to its original depth over the area.	
VISUAL CHARACTERISTICS Visual mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that the site have a neat appearance and is kept in good condition at all times. • Store mining equipment in a dedicated area when not in use. • Limit vegetation removal, and only strip topsoil immediately prior to the mining/use of a specific area. Contain excavations to the approved footprint of the permitted area. Upon closure, rehabilitate the site to ensure that the visual impact on the aesthetic value of the area is reduced to the minimum.	Minimise the impact of the mining operations on the visual characteristics of the receiving environment during the operational phase, and minimise the residual impact after closure.
AIR AND NOISE QUALITY Dust Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Control the liberation of dust into the surrounding environment by the use of; inter alia, water spraying and/or other dust-allaying agents. • Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression.	Dust prevention measures are applied to minimise the impact.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	• Limit speed on the haul roads to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. • Minimise areas devoid of vegetation, and only remove vegetation immediately prior to mining. • Install water sprayers at the crusher plant to alleviate dust generation from the conveyor belts. • Minimise fines, blowing from the drop end of the crusher plant by attaching strips of used conveyor belts to the conveyor's end. • Weekly remove compacted dust from the crusher plant to eliminate the dust source. • Flatten loads to prevent spillage during transportation on public roads. • Consider weather conditions upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts. • Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). • Implement best practice measures during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.	
AIR AND NOISE QUALITY Noise Mitigation	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996.	• Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	• Plan the type, duration and timing of the blasting procedures with due cognizance of other land users and structures in the vicinity. Notify the surrounding land owners in writing prior to each blasting occasion. • Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008. • Implement best practice measures to minimise potential noise impacts.	
GEOLOGY AND SOIL Topsoil Handling	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Strip and stockpile the upper 300 mm of the soil before mining. • Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. • Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. • Place the topsoil on a levelled area, within the mining footprint. Do not stockpile topsoil in undisturbed areas. • Protect topsoil stockpiles against losses by water- and wind erosion. Position stockpiles so it is not vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion. • Ensure that topsoil heaps do not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen.	• Adequate fertile topsoil is available to rehabilitate the mined area.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Keep temporary topsoil stockpiles free of invasive plant species. • Vegetate the topsoil heaps to be stored longer than 6 months with an indigenous grass seed mix if vegetation does not naturally germinate within the first growth season. • Divert storm- and runoff water around the stockpile area to prevent erosion. • Spread the topsoil evenly, to a depth of 300 mm, over the rehabilitated area upon closure of the site. • Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. • Plant a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum production. Rehabilitation extends until the first cover crop is well established. • Control run-off water with temporary banks, where necessary, to prevent accumulation of run-off causing down-slope erosion. • Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
HYDROLOGY Erosion Control and Storm Water Management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR.	• Limit clearing of vegetation to the proposed mining footprint and associated infrastructure. Ensure no clearing takes place outside the minimum required footprint. • Divert stormwater around the topsoil heaps and mining areas to prevent erosion.	• Impact on the environment caused by stormwater discharge is avoided and erosion is managed.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
	Compliance to be monitored by the Environmental Control Officer.	• Protect stockpiles from erosion, and store it on flat areas surrounded by appropriate berms where possible. • Ensure that adequate slope protection is provided when mining within steep slopes. • Control the outflow of run-off water from the mining excavation to prevent down-slope erosion, by constructing temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. • Regularly monitor roads and other disturbed areas within the project for erosion, and ensure problem areas receive follow-up monitoring to assess the success of the remediation. • Rectify erosion problems within the mining area as a result of the mining activities immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. • Use silt/sediment traps/barriers where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and other sensitive areas. Regularly maintain and clear the sediment/silt barriers to ensure effective drainage of the areas. • Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS. • Restrict polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards to the workshop areas and ensure it takes place on impermeable hard standing surfaces,	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		which formally drain to a dirty water drainage system at the site. • Contain all fuels and chemicals stored or used on site in fit for purpose containers and store within designated storage areas. Ensure the designated storage areas are situated on an impermeable surface with a perimeter bund and a drainage sump. Size the volume of the bund and sump to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. Ensure that the storage areas have a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.	
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of vegetation removal.	Permit holder to apply for a destruction/removal plant permit from DEADP Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Clearly demarcate the mining boundaries and contain all operations to the approved mining area. Declare the area outside the mining boundaries a no-go area, and educate all staff accordingly. • Arrange a pre-commencement walk-through of the final mining footprint by a suitably qualified botanist for species of conservation concern that need to be removed/relocated prior to bush clearance. • Obtain permits for the removal of protected plant species (if required) and keep it on-site in the possession (at all times) of the flora search and rescue team. • Arrange a pre-commencement environmental induction for all staff on site to ensure that basic environmental principles are adhered to. This must include awareness of no littering, appropriate handling of pollution and chemical spills, avoiding fire hazards,	• Vegetation clearing is restricted to the authorised development footprint of the mine.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		minimising wildlife interactions, remaining within demarcated construction areas, etc. • Only commence with bush-clearance once the recommendations of the specialist (pre-commencement walkthrough) have been implemented. • Do not burn cleared vegetation to be retained at any time, but rather mulch and stockpiled it. Ideally cover the heaps with stockpiled topsoil and retain the material for future site rehabilitation. • The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place. • Ensure all vehicles remain on demarcated roads and prevent unnecessary driving in the veld outside these areas. • Do not translocated, uprooted or disturbed plants for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. • Do not allow fires on-site. • Provide spoil heaps and topsoil stockpiles with a vegetation cover of indigenous grasses. • If deemed necessary by the ECO, make a firebreak around the periphery of the site in autumn every year. Upon recommendation of the ECO, burn the vegetated areas inside the break on a biennial basis if deemed necessary. Adhere to the relevant veld burning legislation.	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
TERRESTRIAL BIODIVERSITY, CONSERVATION AREAS AND GROUNDCOVER Management of invasive plant species.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. Do weed/alien ongoing clearing on throughout the life of the mining activities. • Do not allow planting or importing of any alien species to the site for landscaping, rehabilitation or any other purpose. • Keep all stockpiles (topsoil & overburden) free of invasive plant species. Control declared invader or exotic species on the rehabilitated areas.	Mining area is kept free of invasive plant species.
FAUNA Protection of fauna	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure no fauna is caught, killed, harmed, sold or played with. • The ECO or other suitably qualified person must remove any fauna directly threatened by the operational activities to a safe location. • Arrange that all personnel undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young. • Ensure all vehicles adhere to a low speed limit (20 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises.	Disturbance to fauna is minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Prevent litter, food or other foreign material thrown or left around the site. Keep such items in the site vehicles and daily removed it to the site camp. • No activities may be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.	
CULTURAL AND HERITAGE ENVIRONMENT Archaeological, heritage and palaeontological aspects.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Confine all mining to the development footprint area. • Implement the following change find procedure when discoveries are made on site: ▪ Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains. ▪ If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository. ▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA. • Work may only continue once the go-ahead was issued by SAHRA.	• Impact to cultural/heritage resources is avoided or at least minimised.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
LAND USE Loss of agricultural land for duration of mining.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	If needed, sign mined-out/rehabilitated areas back to agricultural use once the cover crop stabilised.	Mining has the least possible impact on the operation of the property.
EXISTING INFRASTRUCTURE Management of the access road.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Divert storm water around the access road to prevent erosion. • Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access road caused as a direct result of the mining activities. • Prevent the overloading of the trucks and file proof of load weights for auditing by relevant officials. Restrict the speed of all mining equipment/vehicles to 40 km/h on the access roads.	The access road remains accessible to the landowner and lawful occupiers during the operational phase, and upon closure, the road is returned in a better, or at least the same state as received by the permit holder.
GENERAL Waste management	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure regular vehicle maintenance, repairs and services only take place at the workshop and service area. Ensure drip trays are present if emergency repairs are needed on equipment not able to move to the workshop. Dispose all waste products in a closed container/bin to be removed from the emergency service area (same day) to the workshop in order to ensure proper disposal. Treat this as hazardous waste and dispose of it at a registered hazardous waste handling facility, alternatively arrange collection by a	Wastes are appropriately handled and safely disposed of at recognised waste facilities.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		registered hazardous waste handling contractor. File safe disposal certificates for auditing purposes. • If a diesel bowser is used on site, equip it with a drip tray at all times. Use drip trays during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Ensure drip trays are cleaned after each use. Do not allow dirty drip trays to be used on site. Dispose of dirty rags used to clean the drip trays as hazardous waste into a designated bin at the workshop, where it is incorporated into the hazardous waste removal system. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and remove it from the site, either for resale or for appropriate disposal at a recognized facility. File proof. • Obtain an oil spill kit, and train the employees in the emergency procedures to follow when a spill occurs as well as the application of the spill kit. • Clean spills immediately, within two hours of occurrence, to the satisfaction of the Regional Manager (DMRE) by removing the spillage together with the polluted soil and containing it in a designated hazardous waste bin until it is disposed of at a recognised facility. File proof. • Ensure suitable covered receptacles are available at all times and conveniently placed for the disposal of general waste. • Store non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., in a container with a closable lid at a collecting point to be collected at least	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		once a month and disposed of at a recognized landfill site. The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must be disposed of at a waste disposal facility licensed to accept such waste or recycled or treated at a licensed waste treatment facility." the third party collecting the waste must be licensed or accredited for waste collection. Take specific precautions to prevent refuse from being dumped on or in the vicinity of the mine area. File proof of disposal. • Handle biodegradable refuse as indicated above. • Encourage re-use or recycling of waste products. • Do not bury or burn waste on the site. • Provide ablution facilities in the form of a chemical toilet/s. Anchor the chemical toilet (to prevent blowing/falling over) and arrange that it is serviced at least once a week for the duration of the mining activities by a registered liquid waste handling contractor. File the safe disposal certificates. • Ensure that the use of any temporary, chemical toilet facilities do not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. • Do not discharge water containing waste into the natural environment. • Implement measures to contain the waste water and safely dispose thereof. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the	

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		Department of Water and Sanitation and other relevant authorities. Implement the use of waste registers to keep record of the waste generated and removed from the mining area.	
GENERAL Storage/handling of hazardous substances/chemicals.	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Place chemical storage areas on level ground to prevent offsite migration of any spilled product. • Ensure that the floor of the storage area is impermeable to prevent seepage of spilled products into the ground or ground water. • Control access to the chemicals/substances and implement a notification system of an appropriate staff member. • Ensure that the storage area is out of the 1:100 year floodline or further than 100 m from the edge of a watercourse, whichever is greatest. • Maintain a Hazardous Substances Register, and keep Safety Data Sheets (SDS) current for all chemicals used on site. • Ensure any fuel/used oil tanks have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. Check that the bund capacity is sufficient to contain 110% of the tank's maximum capacity. Ensure that the distance and height of the bund wall relative to that of the tank is taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund.	The chemical/hazardous substances used on site are stored according to specifications without contaminating the receiving environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. Inspect the bund area at least weekly and remove any accumulated rainwater and hand it as contaminated water. Check all valves and outlets to ensure that its intact and closed securely. • Ensure that the bund base slope towards an oil sump of sufficient size. Do not allow contaminated water to mix with clean water, and contain it until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. • Use drip trays under all stationary equipment or vehicles. Place used drip trays within a bunded area and do not store on the bare soil. Discard the waste water originating from the cleaning of drip trays into the oil sump.	
GENERAL Management of health and safety risks	Site Manager to ensure compliance with the guidelines as stipulated in the EMPR. Compliance to be monitored by the Environmental Control Officer.	• Ensure that workers have access to the correct PPE as required by law. • Locate sanitary facilities within 100 m from any point of work. • Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). • Plan the type, duration and timing of blasting with due cognizance of other land users and structures in the vicinity. • Inform the surrounding landowners and communities in writing ahead of any blasting event.	• Employees work in a healthy and safe environment.

MANAGEMENT OBJECTIVES	ROLE	MANAGEMENT ACTION	MANAGEMENT OUTCOME
		• Monitor the compliance of ground vibration and airblast levels to USBM standards with each blasting event. • Record all blasts with a vibro recorder. • Give audible warning of a pending blast at least 3 minutes in advance of the blast. • Limit fly rock, and collect and remove flyrock and rock spill that falls beyond the working area.	

n) Aspects for inclusion as conditions of Authorisation.

Any aspects which must be made conditions of the Environmental Authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* above should be considered for inclusion in the environmental authorisation.

o) Description of any assumptions, uncertainties and gaps in knowledge.

(Which relate to the assessment and mitigation measures proposed)

The assumptions made in this document which relate to the assessment and mitigation measures proposed, stem from site specific information gathered from site inspections, desktop studies as well as the specialist study. No uncertainty regarding the proposed project or the receiving environment could be identified.

p) Reasoned opinion as to whether the proposed activity should or should not be authorised

i) Reasons why the activity should be authorised or not.

Should the mitigation measures and monitoring programmes proposed in this document be implemented on site, no fatal flaws could be identified that were deemed as severe as to prevent the activity continuing.

ii) Conditions that must be included in the authorisation

The management objectives listed in this report under *Part A(1)(m) Proposed impact management objectives and the impact management outcomes for inclusion in the EMPR* should be considered for inclusion in the environmental authorisation.

q) Period for which the Environmental Authorisation is required.

The Applicant requests the Environmental Authorisation to be valid for a five-year period to correspond with the validity of the mining permit.

r) Undertaking

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPR and is applicable to both the Basic Assessment Report and the Environmental Management Programme report.

s) Financial Provision

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

i) Explain how the aforesaid amount was derived

The annual amount required to manage and rehabilitate the environment was estimated to be R 537500. Please see the explanation as to how this amount was derived at attached as Appendix H – Financial and Technical Competence Report.

ii) Confirm that this amount can be provided from operating expenditure.

(Confirm that the amount is anticipated to be an operating cost and is provided for as such in the Mining Work Programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

Inzalo Crushing and Aggregates (Pty) Ltd will be responsible for the financial and technical aspects of the proposed mining project. The operating expenditure is provided for as such in the Financial and Technical Competence Report attached as Appendix H to this report.

t) Specific Information required by the competent Authority

i) Compliance with the provisions of sections 24(4)(a) and (b) read with section 24 (3)(a) and (7) of the National Environmental Management Act (Act 107 of 1998). The EIA report must include the: -

(1) Impact on the socio-economic conditions of any directly affected person.

(Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any directly affected person including the landowner, lawful occupier, or, where applicable, potential beneficiaries of any land restitution claim, attach the investigation report as an Appendix)

The following potential impacts were identified that may impact on socio-economic conditions of directly affected persons:

- **Visual intrusion associated with the proposed mining activities:**

  The viewshed analysis showed that the visual impact of the proposed aggregate / gravel mining operation will be of low significance, especially as no permanent structures will be constructed. The small scale of the proposed operation, and the mining area will be located between two hills in order to minimize the visual impact. Should the Applicant successfully rehabilitate the mining area (upon closure), no residual visual impact is expected upon closure of the mine.

- **Dust nuisance caused as a result of the proposed mining activities:**

  The proposed activity will contribute the emissions mechanical mining equipment to the receiving environment for the duration of the operational phase. Should the permit holder implement the mitigation measures proposed in this document and the EMPR the impact on the air quality of the surrounding environment is deemed to be of low significance and compatible with the current land use.

- **Noise nuisance as a result of mining activities:**

  The potential impact on the noise ambiance of the receiving environment is expected to be of low significance and representative of the traffic of the surrounding area. The site is an extension of an existing quarry that has been operational for several years this further lessens the potential noise impact.

- **Employment opportunities and socio-economic impact:**

  The proposed labour component of the activity will be four employees. The operation will contribute to the local economy in the area, both directly and through the multiplier effect that its continued presence will create.

  Equipment and supplies will be purchased locally, and wages are spent at local businesses, generating both jobs and income in the area. Although the employees are not resident on the site, they will be from the surrounding community.

(2) Impact on any national estate referred to in section 3(2) of the National Heritage Resources Act.

(Provide the results of investigation, assessment, and evaluation of the impact of the mining, bulk sampling or alluvial diamond prospecting on any national estate referred to in section 3(2) of the National Heritage Resources Act, 1999 (Act No 25 of 1999) with the exception of the national estate contemplated in section 3(2)(i)(vi) and (vii) of the Act, attach the investigation report as Appendix 2.19.2 and confirm that the applicable mitigation is reflected in 2.5.3; 2.11.6 and 2.12 herein).

According to the Heritage Impact Assessment (see Appendix M), The study area is altered due to the development of a golf course, roads and an adjacent quarry, that would have obliterated surface indicators of heritage resources if any ever occurred in the study area. The study area is flat without focal points like natural pans or rocky outcrops that would have attracted human occupation in antiquity and is considered to be of low heritage potential. This was confirmed during the site visit when no heritage resources of significance were noted.

The impact of the proposed project on heritage resources low and it is recommended that the proposed project can commence on the condition that the recommendations (Section 10.1 see Appendix M) are implemented as part of the EMPr and based on approval from SAHRA the proposed mining footprint extends into an area that has previously been used for mining, and therefore no sites of archaeological or cultural importance is expected within the footprint. In light of this, it is proposed that a chance-find protocol be incorporated in the EMPR to be adhered to for the duration of the site establishment, operational- and decommissioning phases

Should any human remains be encountered at any stage during the works associated with the project, work must in the vicinity must cease immediately, the remains must be left in situ but made secure and the project archaeologist and SAHRA must be notified immediately in order to make a decision about how to deal with the remains.

If fossils are found during quarrying, they must be excavated and collected by a professional palaeontologist and then housed in a recognised repository.

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u) Other matters required in terms of section 24(4)(a) and (b) of the Act.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist. The EAP must attach such motivation as Appendix 4)

Site Alternative 1, as discussed earlier, was identified during the assessment phase of the environmental impact assessment by the Applicant and project team, as the preferred and only viable site alternative. The Applicant will recover the aggregate / gravel by means of mechanical excavation with earthmoving equipment, crush, screen, and store it at the proposed mining area.

The no-go alternative entails no change to the status quo and is therefore a real alternative that must be considered. The aggregate / gravel to be mined at the site will be used in the building and construction industries, if however, the no-go alternative is implemented the Applicant will not be able to utilise the mineral present in the area.

PART B

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

1. FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME.

a) Details of the EAP,

(Confirm that the requirements for the provision of the details and expertise of the EAP are already included in Part A, section 1(a) herein as required).

The details and expertise of Sonette Smit of Greenmined Environmental that acts as EAP on this project has been included in Part A Section 1(a) as well as Appendix L as required.

b) Description of the Aspects of the Activity

(Confirm that the requirements to describe the aspects of the activity that are covered by the draft environmental management programme is already included in PART A, section (1)(h) herein as required).

The aspects of the activity that are covered by the draft environmental management programme has been described and included in Part A, section (1)(h).

c) Composite Map

(Provide a map (Attached as an Appendix) at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that any areas that should be avoided, including buffers)

As mentioned under Part A, section (1)(l)(ii) this map has been compiled and is attached as Appendix C to this document.

d) Description of impact management objectives including management statements

i) Determination of closure objectives.

(Ensure that the closure objectives are informed by the type of environment described in 2.4 herein)

The primary objective, at the end of the mine's life, is to obtain a closure certificate at minimum cost and in as short a time period as possible whilst still complying with the requirements of the Minerals and Petroleum Resources Development Act (Act No. 28 of 2002) [MPRDA]. To realise this, the following main objectives must be achieved:

- Remove all temporary infrastructure and waste from the mine as per the requirements of this EMPR and of the Provincial Department of Minerals and Resources.
- Shape and contour disturbed areas in compliance with the EMPR.

- Ensure that permanent changes in topography (due to mining) are sustainable and do not cause erosion or the uncontrolled damming of surface water.
- Make all excavations safe.
- Use the topsoil effectively to promote the re-establishment of vegetation.
- Ensure that all rehabilitated areas are stable and self-sustaining in terms of vegetation cover.
- Eradicate all weeds/invader plant species by intensive management of the mining area.

The site-specific closure objectives are discussed in the attached Closure Plan (Appendix J), however, a summary of the closure objectives for the proposed mine were included below.

The decommissioning phase will entail the reinstatement of the processing area by removing the stockpiled material, and site infrastructure/equipment and landscaping the disturbed footprints. Due to the impracticality of importing large volumes of fill to restore the quarry area to its original topography, the rehabilitation option is to develop the quarry into a minor landscape feature. This will entail creating a series of irregular benches along the quarry faces, the top edges of each face being blasted away to form scree slopes on the benches below, thereby reducing the overall face angle. The benches will be top-dressed with topsoil and vegetated with an appropriate grass mix if vegetation does not naturally establish in the area within six months of the replacement of the topsoil.

The decommissioning activities will therefore consist of the following:

- Sloping and landscaping the quarry pit;
- Removing all stockpiled material;
- Removing all mining machinery and equipment from site;
- Landscaping all disturbed areas and replacing the topsoil;
- Vegetating the reinstated area; and
- Controlling/monitoring the invasive plant species.

The future land use of the proposed area will be agriculture. Upon replacement of the topsoil, the area around the excavation will once again be available for grazing purposes, and the planting of the cover crop (to protect the topsoil) will tie in with the proposed land use.

The applicant will comply with the minimum closure objectives as prescribed by the DMRE and detailed below:

- Rehabilitation of the excavated area:

  The excavated area must serve as a final depositing area for the placement of overburden. Rocks and coarse material removed from the excavation must be dumped into the excavation.

  No waste may be permitted to be deposited in the excavations.

  Once overburden, rocks and coarse natural materials has been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.

  The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site.

  If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

- Rehabilitation of plant, office and service areas:

  Coarse natural material used for the construction of ramps must be removed and dumped into the excavations.

  Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium.

  On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

  - Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.

- Areas containing French drains shall be compacted and covered with a final layer of topsoil to a height of 10 cm above the surrounding ground surface.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.

Photographs of the camp and office sites, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the DMRE Regional Manager.

On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.

The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.

If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the DMRE Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

Final rehabilitation:

Rehabilitation of the surface area shall entail landscaping, levelling, top dressing, land preparation, seeding (if required) and maintenance, and invasive plant species clearing.

All mining equipment, and other items used during the mining period must be removed from the site (section 44 of the MPRDA).

Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognized landfill facility. It will not be permitted to be buried or burned on the site.

The management of invasive plant species must be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site.

Final rehabilitation shall be completed within a period specified by the Regional Manager.

Once the mining area was rehabilitated the permit holder is required to submit a closure application to the Department of Mineral Resources and Energy in accordance with section 43(4) of the MPRDA, 2002 that states: *"An application for a closure certificate must be made to the Regional Manager in whose region the land in question is situated within 180 days of the occurrence of the lapsing, abandonment, cancellation, cessation, relinquishment or completion contemplated in subsection (3) and must be accompanied by the prescribed environmental risk report".* The Closure Application will be submitted in terms of Regulation 62 of the MPRDA, 2002, and Government Notice 940 of NEMA, 1998 (as amended).

ii) Volume and rate of water use required for the operation

As no washing is proposed for this project, the applicant will exclusively use water for dust suppression purposes on the access road when needed. Approximately 10 000 litre water/day will be needed during the dry months. The water will be bought and transported to the mining area in a water truck that will moisten the problem area.

iii) Has a water use licence has been applied for?

As no washing is proposed for this project, the Applicant will exclusively use water for dust suppression purposes on the access road when needed. Approximately 10 000 litre water/day will be needed during the dry months. The water will be bought and transported to the mining area in a water truck that will moisten the problem area and therefore the proposed project does not trigger the NWA, 1998 and no additional water use licence is needed.

iv) Impacts to be mitigated in their respective phases

Table 24: Impact to be mitigated in their respective phases

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
(as listed in 2.11.1)	of operation in which activity will take place. State; Planning and design, Pre-Construction, Operational, Rehabilitation, Closure, Post closure	(volumes, tonnages and hectares or m^2)	(describe how each of the recommendations herein will remedy the cause of pollution or degradation and migration of pollutants)	(A description of how each of the recommendations herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)	Describe the time period when the measures in the environmental management programme must be implemented. Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either – Upon cessation of the individual activity or Upon the cessation of mining, bulk sampling or alluvial diamond prospecting as the case may be.
Demarcation of site with visible beacons.	Site Establishment phase	4.9 ha	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Mining of aggregate / gravel is only allowed within the boundaries of the approved area. • MPRDA, 2008 • NEMA, 1998	Beacons need to be in place throughout the life of the activity.
Site establishment and infrastructure development**.**	Site Establishment & Operational Phase	4.9 ha	**<u>Loss of agricultural land for duration of mining:</u>** The Applicant signed a lease agreement with the landowner to compensate for the loss of agricultural land for the duration of the mining period. If needed,	Use of agricultural land must be managed in accordance with the: • CARA, 1983 Closure Plan (Appendix J)	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			mined-out/rehabilitated areas could revert back to agricultural use once the cover crop stabilised.		
• Site establishment	Site Establishment & Operational Phase	4.9 ha	**Visual Mitigation** • Mining must be contained to the boundaries of the permitted area. • The site must have a neat appearance and be kept in good condition at all times. • Mining equipment must be stored neatly in dedicated areas when not in use. • The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the use of a specific area. • Upon closure the mining area must be rehabilitated and levelled to remove the visual impact on the aesthetic value of the area.	Management of the mining area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998	Throughout the site establishment-, and operational phase.
• Site establishment and infrastructure development. • Cumulative Impacts	Site Establishment phase	±4.9 ha	**Management of vegetation removal:** • The mining boundaries must be clearly demarcated and all operations must be contained to the approved mining area. The area outside the mining boundaries must be declared a no-go area, and all staff must be educated accordingly. • Permits for the removal of protected plant species (if required) must be obtained and kept on-site in the possession (at all times) of the flora search and rescue team. • Cleared vegetation to be retained at any time may not be burned, but can be mulched and	Natural vegetated areas must be managed in accordance with the: • NEM:BA 2004 • Western Cape Biodiversity Plan	Throughout the site establishment phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			stockpiled. Ideally the heaps can be covered with stockpiled topsoil and the material be retained for future site rehabilitation purposes. • The on-site ECO must provide supervision and oversight of vegetation clearing activities and other activities which may cause damage to the environment, especially during the site establishment phase, when the majority of vegetation clearing is taking place. • All vehicles must remain on demarcated roads and no unnecessary driving in the veld outside these areas may be allowed. • No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the ECO and without the relevant permits. • No fires must be allowed on-site.		
• Site establishment. • Sloping and landscaping upon closure of the mining area.	Site Establishment- and Decommissioning phase	±4.9 ha	**<u>Topsoil Management:</u>** • The upper 300 mm of the soil must be stripped and stockpiled. • Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. • Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time. • The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. • Topsoil stockpiles must be protected against losses by water and wind erosion. Stockpiles	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion. • Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • The temporary topsoil stockpiles must be kept free of invasive plant species. • Storm- and runoff water must be diverted around the mining area to prevent erosion. • The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site. • The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. • A cover crop must be planted, irrigated and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established. • The rehabilitated area must be monitored for erosion, and appropriately stabilized if any		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			erosion occurs for at least 12 months after reinstatement.		
• Site establishment. • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	Site Establishment-, Operational- and Decommissioning phase	±1 ha	**Management of Invader Plant Species:** • An invasive plant species management plan (Appendix I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. • All stockpiles (topsoil) must be kept free of invasive plant species. • Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: ▪ The plants can be uprooted, felled or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix I)	Throughout the site establishment-, operational, and decommissioning phase.
• Site establishment. • Mining of aggregate / gravel .	Site Establishment- and Operational phase	4.9 ha	**Protection of Fauna:** • The site manager must ensure no fauna is caught, killed, harmed, sold or played with. • Any fauna directly threatened by the operational activities must be removed to a safe location by the ECO or other suitably qualified person.	Fauna must be managed in accordance with the: • NEM:BA 2004	Throughout the site establishment-, and operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• All personnel must undergo environmental induction regarding fauna management and in particular awareness about not harming or collecting species such as snakes, tortoises and owls which are often persecuted out of superstition. Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young. • All vehicles must adhere to a low speed limit (20 km/h is recommended) to avoid collisions with susceptible species such as snakes and tortoises. • No litter, food or other foreign material may be thrown or left around the site. Such items must be kept in the site vehicles and daily removed to the site camp. • No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.		
• Site establishment and infrastructure development. • Excavation, loading and hauling to the processing plant.	Site Establishment, & Operational Phase.	4.9 ha	**Archaeological, Heritage and Palaeontological Aspects:** • All mining must be confined to the development footprint area. • If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate	Cultural/heritage aspects on site must be managed in accordance with the: NHRA, 1999	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			supervisor, and through their supervisor to the senior on-site manager. • It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. • The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify the SAHRA. Work may only continue once the go-ahead was issued by SAHRA.		
• Stripping and stockpiling of topsoil and/or overburden. • Drilling and blasting. • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material.	Site Establishment-, Operational Phase	±1 ha	**<u>Fugitive Dust Emission Mitigation:</u>** • The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). • The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Speed on the haul roads must be limited to 20 km/h and 40 km/h on the access road to prevent the generation of excess dust. • Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining.	Dust generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)	Throughout the site establishment-, operational, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• The crusher plant must have operational water sprayers to alleviate dust generation from the conveyor belts. • Fines, blowing from the drop end of the crusher plant, can be minimized by attaching strips of used conveyor belts to the conveyor's end. • Compacted dust must weekly be removed from the crusher plant to eliminate the dust source. • Loads must be flattened to prevent spillage during transportation on public roads. • Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. • All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012). • Best practice measures shall be implemented during the stripping of topsoil, excavation, and transporting of material from site to minimize potential dust impacts.		
• Site establishment. • Mining of aggregate / gravel . • Crushing, screening, stockpiling and	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**<u>Noise Handling:</u>** • The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996).	Noise generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • NRTA, 1996	Throughout the site establishment-, operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
transporting material from site. • Sloping and landscaping upon closure of the mining area.			• Best practice measures shall be implemented in order to minimize potential noise impacts. • A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.		
• Stripping and stockpiling of topsoil and/or overburden. • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material. • Sloping and landscaping during rehabilitation phase.	Site Establishment-, Operational-, and Decommissioning Phase	4.9 ha	**Waste Management:** • Regular vehicle maintenance, repairs and services may only take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. • Ablution facilities must be provided in the form of a chemical toilet. The chemical toilet must be placed outside the 1:100 year floodline of any open water resource, and must be serviced at least once every two weeks for the duration of the mining activities. • The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder.	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008 • NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)	Throughout the site establishment-, operational-, and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. • Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. • A spill kit must be available on-site which can be operated by trained employees for the adhoc remediation of minor chemical and hydrocarbon spillages. • Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed. • A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM:WA. • General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to capacity to a recognised general waste landfill site. The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must be disposed of at a waste disposal facility licensed to accept such waste or recycled or		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			treated at a licensed waste treatment facility." the third party collecting the waste must be licensed or accredited for waste collection. • No waste may be buried or burned on the site. • No chemicals or hazardous materials may be stored at the mining area. • It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.		
• Stripping and stockpiling of topsoil and overburden. • Excavation, loading and hauling to the processing plant. • Sloping and landscaping during rehabilitation.	Operational Phase	4.9 ha	**<u>Erosion Control and Storm Water Management:</u>** • Clearing of vegetation must be limited to the proposed mining footprint and associated infrastructure. No clearing outside of the minimum required footprint to take place. • Stormwater must be diverted around the topsoil heaps and mining areas to prevent erosion. • Stockpiles must be protected from erosion, stored on flat areas where possible, and be surrounded by appropriate berms. • When mining within steep slopes, it must be ensured that adequate slope protection is provided. • During mining, the outflow of run-off water from the mining excavation must be controlled to prevent down-slope erosion. This must be done by way of the construction of temporary banks and ditches that will direct run-off water (if needed). These must be in place at any points where overflow out of the excavation might occur. • Roads and other disturbed areas within the project area must be regularly monitored for	Storm water must be managed in accordance with the: • CARA, 1983 • NEMA, 1998 • NWA, 1998	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			erosion and problem areas must receive follow-up monitoring to assess the success of the remediation. • Any erosion problems within the mining area as a result of the mining activities observed must be rectified immediately (within 48 hours) and monitored thereafter to ensure that it does not re-occur. • Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be prevented from spilling or seeping into clean water systems. ▪ A storm water management plan must apply for the entire life cycle of the mining activity and over different hydrological cycles (rainfall patterns). ▪ The statutory requirements of various regulatory agencies and the interests of stakeholders must be considered and incorporated into a storm water management plan.		

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Polluting activities including storage of mining fleet, equipment wash down facilities and vehicle maintenance yards must be restricted to the workshop areas and must be undertaken on impermeable hard standing surfaces, which are formally drained to a dirty water drainage system at the site. ▪ All fuels and chemicals stored or used on site must be contained within fit for purpose containers and stored within designated storage areas. In order to prevent pollution of the surrounding environment during an accidental spillage, the designated storage areas must be situated on an impermeable surface and must feature a perimeter bund and a drainage sump. The volume of the bund and sump must be sized to contain at least 110% of the total volume of the fuel and chemicals being stored within the designated storage area. The storage areas must feature a roof to prevent inflow of rainwater, which would require the sump to be emptied more frequently.		
• Crushing, screening, stockpiling and transporting material from site.	Operational Phase	±1 ha	**<u>Access Road Mitigation:</u>** • Storm water must be diverted around the access road to prevent erosion. • Vehicular movement must be restricted to the existing access road to prevent crisscrossing of tracks through undisturbed areas. • Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder.	The access road must be managed in accordance with the: • NRTA, 1996	Throughout the operational phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• Overloading of the truck must be prevented, and proof of load weights must be filed for auditing purposes.		
• Drilling and blasting. • Excavation, loading and hauling to the processing plant. • Sloping and landscaping during rehabilitation phase.	Site Establishment-, Operational-, and Decommissioning phase	4.9 ha	**<u>Management of health and safety risks:</u>** • Workers must have access to the correct personal protection equipment (PPE) as required by law. • Sanitary facilities must be located within 100 m from any point of work. • All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996). • The type, duration and timing of the blasting procedures must be planned with due cognizance of other land users and structures in the vicinity. • The surrounding landowners must be informed in writing ahead of each blasting event. • The compliance of ground vibration and airblast levels must be monitored to USBM standards with each blasting event. • A vibro recorder must be used to record all blasts. • Audible warning of a pending blast must be given at least 3 minutes in advance of the blast. • Measures to limit flyrock must be taken. All flyrock (of diameter 150 mm and larger) which falls beyond the working area, together with the rock spill must be collected and removed.	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001	Throughout the site establishment-, operational and decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
• Site establishment and infrastructure development.	Site Establishment, & Operational Phase.	±500 m²	**Storage/Handling of Hazardous Substances/Chemicals:** • Chemical storage areas must be placed on level ground to prevent offsite migration of any spilled product. • The floor of the storage area must be impermeable to prevent seepage of spilled products into the ground or ground water. • Access to the chemicals/substances must be controlled and require prior notification of an appropriate staff member. • A Hazardous Substances Register must be maintained, and Safety Data Sheets (SDS) must be kept current for all chemicals used on site. • Any fuel/used oil tanks must have secondary containment in the form of an impermeable bund wall and base within which the tanks sits, raised above the floor, on plinths. The bund capacity must be sufficient to contain 110% of the tank's maximum capacity. The distance and height of the bund wall relative to that of the tank must also be taken into consideration to ensure that any spillage does not result in hydrocarbons/other substances spouting beyond the confines of the bund. • The site manager must establish a formal inspection routine to check all equipment in the bund area, as well as the bund area itself for malfunctions or leakages. The bund area must be inspected at least weekly and any accumulated rainwater removed and handled as contaminated water. All valves and outlets must be checked to ensure that its intact and closed securely.	Chemicals/hazardous substances must be stored in accordance with the: • HSA,1973 • NWA, 1998 • NEM:WA, 2008	Throughout the site establishment-, and operational phases.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• The bund base must slope towards an oil sump of sufficient size. Contaminated water may not be allowed to mix with clean water, and must be contained until it is collected by a registered hazardous waste handling contractor or disposed of at a registered hazardous waste handling facility. • Drip trays must be used underneath all stationary equipment or vehicles. Used drip trays must be placed within a bunded area and are not be stored on bare soil. The waste water originating from the cleaning of drip trays must be discarded into the oil sump.		
• Sloping and landscaping during rehabilitation phase.	Decommissioning Phase	4.9 ha	**Rehabilitation/landscaping of mining area:** • The excavated area must serve as a final depositing area for the placement of overburden. • Rocks and coarse material removed from the excavation must be dumped into the excavation. • Coarse natural material used for the construction of ramps must be removed and dumped into the excavations. • Stockpiles must be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium. • No waste may be permitted to be deposited in the excavations. • Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.	Rehabilitation of the mining area must be in accordance with the: ❖ CARA, 1983 ❖ NEM:BA, 2004 ❖ MPRDA, 2002 Closure Plan (Appendix J)	Throughout the decommissioning phase.

ACTIVITIES	PHASE	SIZE AND SCALE OF DISTURBANCE	MITIGATION MEASURES	COMPLIANCE WITH STANDARDS	TIME PERIOD FOR IMPLEMENTATION
			• The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within six months from closure of the site. • If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification. • On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002). • On completion of mining operations, the surface of all plant-, stockpiling-, and/or office areas, if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 200mm and graded to an even surface condition. Where applicable/possible topsoil needs to be returned to its original depth over the area.		

e) Impact Management Outcomes

(A description of impact management outcomes, identifying the standard of impact management required for the aspects contemplated in paragraph ();

Table 25: Impact Management Outcomes

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	POTENTIAL IMPACT (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	ASPECTS AFFECTED	PHASE In which impact is anticipated (e.g. Construction, commissioning, operational Decommissioning, closure, post-closure))	MITIGATION TYPE (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc...etc..) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	STANDARD TO BE ACHIEVED (Impact avoided, noise levels, dust levels, rehabilitation standards, end use objectives) etc.
• Demarcation of site with visible beacons.	• No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	N/A	Site Establishment phase	Control through management and monitoring.	Mining of aggregate / gravel is only allowed within the boundaries of the approved area. • MPRDA, 2008 • NEMA, 1998
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Visual intrusion as a result of site establishment.	The visual impact may affect the aesthetics of the landscape.	Site Establishment & Operational Phase	<u>Control:</u> Implementing proper housekeeping.	Management of the mining area must be in accordance with the: • MPRDA, 2008 • NEMA, 1998
• Site establishment and infrastructure development**.**	• Loss of agricultural land for duration of mining.	The impact may affect the agricultural	Site Establishment & Operational Phase	Should the proposed project be approved, the operation will temporarily interrupt the agricultural activities of the footprint area, only to be reversed upon the closure of the mine.	Use of agricultural land must be managed in accordance with the: • CARA, 1983

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
		opportunities of the property.		The impact could be controlled through progressive rehabilitation.	Closure Plan (Appendix J)
• Stripping and stockpiling of topsoil and overburden. • Excavation, loading and hauling to the processing plant. • Sloping and landscaping during rehabilitation.	• Loss of stockpiled topsoil during mining and stockpiling. • Potential erosion of denuded areas. • Facilitation of erosion due to mining activities. • Erosion of returned topsoil after rehabilitation.	Loss of topsoil will affect the rehabilitation success upon closure of the mine.	Site Establishment-, Operational and Decommissioning Phase	Control & Remedy: Proper housekeeping and storm water management.	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008
• Site establishment • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	• Infestation of the topsoil heaps and mining area with invader plant species. • Infestation of denuded areas with invader plant species • Infestation of the reinstated area with invader plant species.	This will impact on the biodiversity of the receiving environment.	Site Establishment-, Operational- and Decommissioning phase	Control: Implementing soil- and storm water management.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix I)
• Site establishment and infrastructure development. • Stripping and stockpiling of topsoil and overburden.	• Potential impact on fauna within the footprint area. • Disturbance to aquatic fauna within the footprint area	This will impact on the biodiversity of the receiving environment.	Site Establishment- and Operational phase	Control & Stop: Implementing good management practices.	Fauna must be managed in accordance with the: • NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
• Stripping and stockpiling of topsoil and/or overburden. • Drilling and blasting. • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material.	• Dust nuisance as a result of the mining activities. • Dust nuisance as a result of the mining activities.	Increased dust generation will impact on the air quality of the receiving environment.	Site Establishment- and Operational Phase	<u>Control:</u> Dust suppression methods and proper housekeeping.	Dust generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • National Dust Control Regulations, GN No R827 • ASTM D1739 (SANS 1137:2012)
• Stripping and stockpiling of topsoil and/or overburden. • Drilling and blasting. • Excavation, loading and hauling to the processing plant. • Processing, stockpiling and transporting of material.	• Noise nuisance generated by earthmoving machinery. • Noise nuisance as a result of blasting. • Noise nuisance as a result of the mining activities. • Noise nuisance stemming from operation of the processing plant.	Should noise levels become excessive it may have an impact on the noise ambiance of the receiving environment.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control:</u> Noise suppression methods and proper housekeeping.	Noise generation on site must be managed in accordance with the: • NEM:AQA, 2004 Regulation 6(1) • NRTA, 1996
• Mining of aggregate / gravel . • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	• Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter	Contamination of the footprint area will negatively impact the soil, surface runoff and potentially the groundwater. It will also incur additional costs to the permit holder.	Site Establishment-, Operational-, and Decommissioning Phase	<u>Control & Remedy:</u> Proper housekeeping and implementation of an emergency response plan and waste management plan.	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008 • NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	PHASE	MITIGATION TYPE	STANDARD TO BE ACHIEVED
	left at the mining area.				
• Site establishment and infrastructure development. • Excavation, loading and hauling to the processing plant.	• Potential impact on area/infrastructure of heritage or cultural concern.	This could impact on the cultural and heritage legacy of the receiving environment.	Operational Phase	Control & Stop: Implementing good management practices, as well as the chance-find protocol.	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999
• Screening, stockpile, and transporting material from site.	• Deterioration of the access road to the mining area.	Collapse of the road infrastructure will affect the landowner.	Operational Phase	Control & Remedy: Maintaining the access road for the duration of the operational phase, as well as leaving it in a representative or better condition than prior to mining.	The access road must be managed in accordance with the: • NRTA, 1996
• Drilling and blasting. • Excavation, loading and hauling to the processing plant. • Sloping and landscaping during rehabilitation phase.	• Health and safety risk posed by blasting activities. • Unsafe working environment for employees. • Safety risk posed by un-sloped areas.	An unsafe working environment affects the labour force, as well as pose a threat to animals and humans that may enter the mining footprint.	Operational-, and Decommissioning Phase	Stop & Control: Adherance to the blasting rules and regulations, demarcation of the mining area and proper housekeeping.	Health and safety aspects on site must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS 18001 USBM standards
• Screening, stockpile, and transporting material from site.	• Overloading of trucks having an impact on the public roads.	Overloading will negatively affect the roads in the vicinity of the mining area.	Operational Phase	Control: Proper site management.	Load weights must be managed in accordance with the: • NRTA, 1996

f) Impact Management Actions

(A description of impact management actions, identifying the manner in which the impact management objectives and outcomes in paragraph (c) and (d) will be achieved)

Table 26: Impact Management Actions

ACTIVITY whether listed or not listed (E.g. Excavations, blasting, stockpiles, discard dumps or dams, Loading, hauling and transport, Water supply dams and boreholes, accommodation, offices, ablution, stores, workshops, processing plant, storm water control, berms, roads, pipelines, power lines, conveyors, etc...etc..etc.)	**POTENTIAL IMPACT** (e.g. dust, noise, drainage surface disturbance, fly rock, surface water contamination, groundwater contamination, air pollution etc...etc..)	**MITIGATION TYPE** (modify, remedy, control, or stop) through (e.g. noise control measures, storm-water control, dust control, rehabilitation, design measures, blasting controls, avoidance, relocation, alternative activity etc... etc.) E.g. • Modify through alternative method. • Control through noise control • Control through management and monitoring Remedy through rehabilitation.	**TIME PERIOD FOR IMPLEMENTATION** Describe the time period when the measures in the environmental management programme must be implemented Measures must be implemented when required. With regard to Rehabilitation specifically this must take place at the earliest opportunity. With regard to Rehabilitation, therefore state either: Upon cessation of the individual activity Or. Upon the cessation of mining bulk sampling or alluvial diamond prospecting as the case may be.	**COMPLIANCE WITH STANDARDS** (A description of how each of the recommendations in 2.11.6 read with 2.12 and 2.15.2 herein will comply with any prescribed environmental management standards or practices that have been identified by Competent Authorities)
◦ Demarcation of site with visible beacons.	◦ No impact could be identified other than the beacons being outside the boundaries of the approved mining area.	Demarcation of the site will ensure that all employees are aware of the boundaries of the mining area, and that work stay within the approved area.	Beacons need to be in place throughout the life of the activity.	Mining of aggregate / gravel is only allowed within the boundaries of the approved area. ◦ MPRDA, 2008 ◦ NEMA, 1998
◦ Site establishment	◦ Visual intrusion as a result of site establishment.	**<u>Visual Mitigation</u>** ◦ Mining must be contained to the boundaries of the permitted area.	Throughout the site establishment-, and operational phase.	Management of the mining area must be in accordance with the: ◦ MPRDA, 2008

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• The site must have a neat appearance and be kept in good condition at all times. • The permit holder must limit vegetation removal (if applicable), and stripping of topsoil may only be done immediately prior to the use of a specific area. • Upon closure the mining area must be rehabilitated and levelled to remove the visual impact on the aesthetic value of the area.		• NEMA, 1998
• Site establishment • Crushing, screening, stockpiling and transporting material from site. • Sloping and landscaping upon closure of the mining area.	• Loss of topsoil and fertility during mining and stockpiling • Loss of stockpiled material due to ineffective storm water control. • Erosion of returned topsoil after rehabilitation	**<u>Topsoil Management:</u>** • The upper 300 mm of the soil must be stripped and stockpiled. • Topsoil is a valuable and essential resource for rehabilitation and it must therefore be managed carefully to conserve and maintain it throughout the stockpiling and rehabilitation processes. • Topsoil stripping, stockpiling and re-spreading must be done in a systematic way. The mining plan have to be such that topsoil is stockpiled for the minimum possible time. • The topsoil must be placed on a levelled area, within the mining footprint. No topsoil may be stockpiled in undisturbed areas. • Topsoil stockpiles must be protected against losses by water and wind erosion. Stockpiles must be positioned so as not to be vulnerable to erosion by wind and water. The establishment of plants (weeds or a cover crop) on the stockpiles will help to prevent erosion.	Throughout the site establishment-, operational, and decommissioning phase.	Topsoil must be managed in accordance with the: • CARA, 1983 • NEM:BA, 2004 • MPRDA, 2008

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• Topsoil heaps may not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • The temporary topsoil stockpiles must be kept free of invasive plant species. • Storm- and runoff water must be diverted around the mining area to prevent erosion. • The stockpiled topsoil must be evenly spread, to a depth of 300 mm, over the rehabilitated area upon closure of the site. • The permit holder must strive to re-instate topsoil at a time of year when vegetation cover can be established as quickly as possible afterwards, so that erosion of returned topsoil by both rain and wind, before vegetation is established, is minimized. The best time of year is at the end of the rainy season, when there is moisture in the soil for vegetation establishment and the risk of heavy rainfall events is minimal. • A cover crop must be planted, irrigated and established immediately after spreading of topsoil, to stabilize the soil and protect it from erosion. The cover crop must be fertilized for optimum biomass production. It is important that rehabilitation be taken up to the point of cover crop stabilization. Rehabilitation cannot be considered complete until the first cover crop is well established. • The rehabilitated area must be monitored for erosion, and appropriately stabilized if any erosion occurs for at least 12 months after reinstatement.		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Site establishment • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	• Infestation of the topsoil heaps and mining area with invader plant species. • Infestation of denuded areas with invader plant species • Infestation of the reinstated area with invader plant species.	**Management of Invader Plant Species:** • An invasive plant species management plan (Appendix I) must be implemented at the site to ensure the management and control of all species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto). Weed/alien clearing must be done on an ongoing basis throughout the life of the mining activities. • All stockpiles (topsoil) must be kept free of invasive plant species. • Management must take responsibility to control declared invader or exotic species on the rehabilitated areas. The following control methods can be used: ▪ The plants can be uprooted, felled or cut off and can be destroyed completely. ▪ The plants can be treated chemically by a registered pest control officer (PCO) through the use of an herbicide recommended for use by the PCO in accordance with the directions for the use of such an herbicide.	Throughout the site establishment-, operational, and decommissioning phase.	Invader plants must be managed in accordance with the: • CARA, 1983 • NEM:BA 2004 • Invasive Plant Species Management Plan (Appendix I)
• Site establishment. • Mining of aggregate / gravel .	• Potential impact on fauna within the footprint area.	**Protection of Fauna:** • The site manager must ensure no fauna is caught, killed, harmed, sold or played with. • Workers must be instructed to report any animals that may be trapped in the working area. • No snares may be set or nests raided for eggs or young.	Throughout the site establishment-, and operational phase.	Fauna must be managed in accordance with the: • NEM:BA 2004

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		▪ No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.		
▪ Site establishment ▪ Screening, stockpile, and transporting material from site.	▪ Dust nuisance as a result of the mining activities. ▪ Dust nuisance as a result of the mining activities.	**<u>Fugitive Dust Emission Mitigation:</u>** ▪ The liberation of dust into the surrounding environment must be effectively controlled by the use of, inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). ▪ The site manager must ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. ▪ Speed on the access road must be limited to 40 km/h to prevent the generation of excess dust. ▪ Areas devoid of vegetation, which could act as a dust source, must be minimized and vegetation removal may only be done immediately prior to mining. ▪ Loads must be flattened and covered to ensure that minimal spillage of material takes place during transportation, also preventing windblown dust. ▪ Weather conditions must be taken into consideration upon commencement of daily operations. Limiting operations during very windy periods would reduce airborne dust and resulting impacts. ▪ All dust generating activities shall comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA (Act 39 of 2004) and ASTM D1739 (SANS 1137:2012).	Throughout the site establishment-, operational, and decommissioning phase.	Dust generation must be managed in accordance with the: ▪ NEM:AQA. 2004 Regulation 6(1) ▪ National Dust Control Regulations, GN No R827 ▪ ASTM D1739 (SANS 1137:2012)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• Best practice measures shall be implemented during the stripping of topsoil, loading, and transporting of the aggregate / gravel from site to minimize potential dust impacts.		
• Site establishment • Mining of aggregate / gravel • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	• Noise nuisance as a result of the mining activities. • Noise nuisance as a result of the decomissiononig activities.	**Noise Handling:** • The permit holder must ensure that employees and staff conduct themselves in an acceptable manner while on site. • No loud music may be permitted at the mining area. • All mining vehicles must be equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996 (Act No 93 of 1996). • Best practice measures shall be implemented in order to minimize potential noise impacts. • A qualified occupational hygienist must be contracted to quarterly monitor and report on the personal noise exposure of the employees working at the mine. The monitoring must be done in accordance with the SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA, 2004, SANS 10103:2008.	Throughout the site establishment-, operational-, and decommissioning phase.	Noise generation must be managed in accordance with the: • NEM:AQA. 2004 Regulation 6(1) • NRTA, 1996
• Mining of aggregate / gravel . • Screening, stockpile, and transporting material from site.	• Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter left at the mining area.	**Waste Management:** • Regular vehicle maintenance, repairs and services may only take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200	Throughout the site establishment-, operational-, and decommissioning phase.	Mining related waste must be managed in accordance with the: • NWA, 1998 • NEM:WA, 2008 • NEM:WA, 2008: National norms and standards for the storage of waste (GN 926) • NEMA, 1998 (Section 30)

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
▪ Sloping and landscaping upon closure of the mining area.		litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. ▪ Ablution facilities must be provided in the form of a chemical toilet. The chemical toilet must be placed outside the 1:100 year floodline of any open water resource, and must be serviced at least once every two weeks for the duration of the mining activities. ▪ The use of any temporary, chemical toilet facilities may not cause any pollution to water sources or pose a health hazard. In addition, no form of secondary pollution should arise from the disposal of refuse or sewage from the temporary, chemical toilets. Any pollution problems arising from the above are to be addressed immediately by the permit holder. ▪ If a diesel bowser is used on site, it must be equipped with a drip tray at all times. Drip trays must be used during each and every refuelling event. The nozzle of the bowser needs to rest in a sleeve to prevent dripping after refuelling. ▪ Site management must ensure drip trays are cleaned after each use. No dirty drip trays may be used on site. ▪ A spill kit must be available on-site which can be operated by trained employees for the adhoc remediation of minor chemical and hydrocarbon spillages. ▪ Any effluents containing oil, grease or other industrial substances must be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility.		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		• Should spillage occur, such as oil or diesel leaking from a burst pipe, the contaminated soil must, within the first hour of occurrence, be collected in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. Proof must be filed. • A waste management plan must be compiled by site management and implemented on site. The plan must focus on the waste hierarchy of the NEM:WA. • General waste must be contained in marked, sealable, refuse bins placed at a designated area, to be removed when filled to capacity to a recognised general waste landfill site. The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must be disposed of at a waste disposal facility licensed to accept such waste or recycled or treated at a licensed waste treatment facility." the third party collecting the waste must be licensed or accredited for waste collection. • No waste may be buried or burned on the site. • No chemicals or hazardous materials may be stored at the mining area. • It is important that any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities is reported to the Department of Water and Sanitation and other relevant authorities.		

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Mining of aggregate / gravel .	• Potential impact on area/infrastructure of heritage or cultural concern.	**Archaeological, Heritage and Palaeontological Aspects:** • All mining must be confined to the development footprint area. • If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. • It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. • The senior on-site Manager must inform the ECO of the chance find and its immediate impact on operations. The ECO must then contact a professional archaeologist for an assessment of the finds who must notify SAHRA. • Work may only continue once the go-ahead was issued by SAHRA.	Throughout the operational phase.	Cultural/heritage aspects must be managed in accordance with the: • NHRA, 1999
• Crushing, screening, stockpiling and transporting material from site. • Mining of aggregate / gravel .	• Loss of stockpiled material due to ineffective storm water control.	**Storm Water Mitigation:** • Storm water must be diverted around the topsoil heaps and mining area to prevent erosion. • Mining must be conducted only in accordance with the Best Practice Guideline for small scale mining that relates to storm	Throughout the operational phase.	Storm water must be managed in accordance with the: • CARA, 1983 • NEMA, 1998 • NWA, 1998

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
		water management, erosion and sediment control and waste management, developed by the Department of Water and Sanitation (DWS), and any other conditions which that Department may impose: ▪ Clean water (e.g. rainwater) must be kept clean and be routed to a natural watercourse by a system separate from the dirty water system. You must prevent clean water from running or spilling into dirty water systems. ▪ Dirty water must be collected and contained in a system separate from the clean water system. ▪ Dirty water must be prevented from spilling or seeping into clean water systems.		
◣ Screening, stockpile, and transporting material from site.	◣ Deterioration of the access road to the mining area. ◣ Overloading of trucks having an impact on the public roads.	**<u>Access Road Mitigation:</u>** ◣ Storm water must be diverted around the access road to prevent erosion. ◣ Vehicular movement must be restricted to the existing access road to prevent crisscrossing of tracks through undisturbed areas. ◣ Rutting and erosion of the access road caused as a direct result of the mining activities must be repaired by the permit holder. ◣ Overloading of the truck must be prevented, and proof of load weights must be filed for auditing purposes.	Throughout the operational phase.	The access road must be managed in accordance with the: ◣ NRTA, 1996

ACTIVITY	POTENTIAL IMPACT	MITIGATION TYPE	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
• Site establishment. • Mining of aggregate / gravel . • Crushing, screening, stockpiling and transporting material from site. • Sloping and landscaping upon closure of the mining area.	• Potential health and safety risk to employees.	**Management of Health and Safety Risks:** • Adequate ablution facilities and water for human consumption must daily be available on site. • Workers must have access to the correct personal protection equipment (PPE) as required by law. • All operations must comply with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	Throughout the site establishment-, operational and decommissioning phase.	Health and safety aspects must be managed in accordance with the: • MHSA, 1996 • OHSA, 1993 • OHSAS, 18001

i) Financial Provision

(1) Determination of the amount of Financial Provision.

(a) Describe the closure objectives and the extent to which they have been aligned to the baseline environment described under the Regulation.

The closure objectives entail removing the mining machinery from the site. Removal of the crushing and screening plant, containers, weighbridge and chemical toilet from the mining area, removal/levelling of all stockpiled material and the landscaping of the mining area to allow the replacement of stockpiled topsoil. The reinstated area will be vegetated and invasive plant species will be controlled during a 12 months' aftercare period to address germination of problem plants in the area. The Applicant will comply with the minimum closure objectives as prescribed by DMRE.

(b) Confirm specifically that the environmental objectives in relation to closure have been consulted with landowner and interested and affected parties.

This report, the Final Basic Assessment Report, includes all the environmental objectives in relation to closure and will be made available for perusal by the landowner, registered I&AP's and stakeholders over a 30-days commenting period.

(c) Provide a rehabilitation plan that describes and shows the scale and aerial extent of the main mining activities, including the anticipated mining area at the time of closure.

The requested rehabilitation plan is attached as Appendix E.

(d) Explain why it can be confirmed that the rehabilitation plan is compatible with the closure objectives.

The decommissioning phase will entail the final rehabilitation of the mining site. Final landscaping, levelling and top dressing will be done. The rehabilitation of the mining area as indicated on the rehabilitation plan attached as Appendix E will comply with the minimum closure objectives as prescribed by DMRE and detailed below, and therefore is deemed to be compatible:

- Rehabilitation of the Excavated Area:

  The risk of unsloped and unrehabilitated areas posing a safety risk can be reduced to being Low through the implementation of the mitigation measures listed below:

  - The excavated area must serve as a final depositing area for the placement of overburden.
  - Rocks and coarse material removed from the excavation must be dumped into the excavation.
  - No waste may be permitted to be deposited in the excavations.
  - Once overburden, rocks and coarse natural materials have been added to the excavation and it was profiled with acceptable contours and erosion control measures, the topsoil previously stored must be returned to its original depth over the area.
  - The area must be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local or adapted indigenous seed mix in order to propagate the locally or regionally occurring flora, should natural vegetation not re-establish within 6 months from closure of the site. Seeds should be harvested prior to commencement of the mining activities and indigenous vegetation or a suitable crop should be reintroduced during the rehabilitation process;
  - Where re-vegetation work will be done on the disturbed areas, only suitable crops, or locally indigenous, endemic vegetation must be used, and no “alien Plant” species are allowed.
  - If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a vegetation seed mix to his or her specification.

- Rehabilitation of the Mining area:

  Stockpiles will be removed during the decommissioning phase, the area ripped and the topsoil returned to its original depth to provide a growth medium. On completion of operations, all structures or objects shall be dealt with in accordance with section 44 of the Mineral and Petroleum Resources Development Act, 2002 (Act 28 of 2002):

- Where sites have been rendered devoid of vegetation/grass or where soils have been compacted owing to traffic, the surface shall be scarified or ripped.
- The site shall be seeded with a vegetation seed mix adapted to reflect the local indigenous flora.
- Photographs of the office sites and workshop, before and during the mining operation and after rehabilitation, shall be taken at selected fixed points and kept on record for the information of the Regional Manager.
- On completion of mining operations, the surface of these areas, if compacted due to hauling and dumping operations, shall be scarified and graded to an even surface condition. Where applicable / possible topsoil needs to be returned to its original depth over the area.
- Prior to replacing the topsoil, the material that was removed from these areas will be replaced in the same order as it originally occurred. The area shall then be fertilized if necessary to allow vegetation to establish rapidly. The site shall be seeded with a local, adapted indigenous seed mix.
- If a reasonable assessment indicates that the re-establishment of vegetation is unacceptably slow, the Regional Manager may require that the soil be analysed and any deleterious effects on the soil arising from the mining operation be corrected and the area be seeded with a seed mix to his or her specification.

- Final Rehabilitation:

Final rehabilitation of the surface area shall entail landscaping, levelling, maintenance, and clearing of invasive plant species. All equipment, plant and other items used during the mining period will be removed from site (section 44 of the MPRDA, 2002). Waste material of any description will be removed entirely from the mining area and disposed of at a recognized landfill facility. The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must be disposed of at a waste disposal facility licensed to accept such waste or recycled or treated at a licensed waste treatment facility." the third party collecting the waste must be licensed or accredited for waste collection. It will not be permitted to be buried or burned on the site. The management of invasive plant species

will be done in a sporadic manner during the life of the mining activities. Species regarded as Category 1a and 1b invasive species in terms of NEM:BA (National Environmental Management: Biodiversity Act 10 of 2004 and regulations applicable thereto) will be eradicated from the site. Final rehabilitation shall be completed within a period specified by the Regional Manager.

(e) Calculate and state the quantum of the financial provision required to manage and rehabilitate the environment in accordance with the applicable guideline.

The calculation of the quantum for financial provision was according to Section B of the working manual.

Mine type and saleable mineral by-product

According to Tables B.12, B.13 and B.14

Mine type	Aggregate / gravel
Saleable mineral by-product	None

Risk ranking

According to Tables B.12, B.13 and B.14

Primary risk ranking (either Table B.12 or B.13)	C (Low risk).
Revised risk ranking (B.14)	N/A

Environmental sensitivity of the mine area

According to Table B.4

Environmental sensitivity of the mine area	Low

Level of information

According to Step 4.2:

Level of information available	Limited

Identify closure components

According to Table B.5 and site-specific conditions

Component No.	Main description	Applicability of closure components (Circle Yes or No)	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	**NO**
2(A)	Demolition of steel buildings and structures	-	**NO**
2(B)	Demolition of reinforced concrete buildings and structures	-	**NO**
3	Rehabilitation of access roads	-	**NO**
4(A)	Demolition and rehabilitation of electrified railway lines	-	**NO**
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	**NO**
5	Demolition of housing and facilities	-	**NO**
6	Opencast rehabilitation including final voids and ramps	**YES**	
7	Sealing of shafts, adits and inclines	-	**NO**
8(A)	Rehabilitation of overburden and spoils	-	**NO**
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	**NO**
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	**NO**
9	Rehabilitation of subsided areas	-	**NO**
10	General surface rehabilitation, including grassing of all denuded areas	**YES**	-
11	River diversions	-	**NO**
12	Fencing	-	**NO**
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	**NO**
14	2 to 3 years of maintenance and aftercare	**YES**	

Unit rates for closure components

According to Table B.6 master rates and multiplication factors for applicable closure components.

Component No.	Main description	Master rate	Multiplication factor
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	-	-
2(A)	Demolition of steel buildings and structures	-	-
2(B)	Demolition of reinforced concrete buildings and structures	-	-
3	Rehabilitation of access roads	-	-
4(A)	Demolition and rehabilitation of electrified railway lines	-	-
4(B)	Demolition and rehabilitation of non-electrified railway lines	-	-
5	Demolition of housing and facilities	-	-
6	Opencast rehabilitation including final voids and ramps	253 019	0.5-
7	Sealing of shafts, adits and inclines	-	-
8(A)	Rehabilitation of overburden and spoils	168 679	-
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing)	-	-
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich)	-	-
9	Rehabilitation of subsided areas	-	-

Component No.	Main description	Master rate	Multiplication factor
10	General surface rehabilitation, including grassing of all denuded areas	126 059	1.00
11	River diversions	-	-
12	Fencing	-	-
13	Water management (Separating clean and dirty water, managing polluted water and managing the impact on groundwater)	-	-
14	2 to 3 years of maintenance and aftercare	16 776	1.00

Determine weighting factors

According to Tables B.7 and B.8

Weighting factor 1: Nature of terrain/accessibility	1.1 (Undulating)
Weighting factor 2: Proximity to urban area where goods and services are to be supplied	1.05

Calculation of closure costs

Table B.10 Template for Level 2: "Rules-based" assessment of the quantum for financial provision

Table 27: Calculation of closure cost

CALCULATION OF THE QUANTUM							
Mine:	Inzalo Crushing and Aggregates (Pty) Ltd			**Location:**	Leandra		
Evaluators:	S Smit			**Date:**	27 May 2021		
No	**Description**	**Unit**	**A Quantity**	**B Master rate**	**C Multiplication factor**	**D Weighting factor 1**	**E=A *B*C*D Amount (Rand)**
			Step 4.5	**Step 4.3**	**Step 4.3**	**Step 4.4**	
1	Dismantling of processing plant and related structures (including overland conveyors and power lines)	m^2	0	16	1.00	1.1	R 0.00
2(A)	Demolition of steel buildings and structures	m^2	0	228	1.00	1.1	R 0.00
2(B)	Demolition of reinforced concrete buildings and structures	m^2	0	336	1.00	1.1	R 0.00
3	Rehabilitation of access roads	m^2	0	41	1.00	1.1	R 0.00
4(A)	Demolition and rehabilitation of electrified railway lines	m	0	395	1.00	1.1	R 0.00
4(B)	Demolition and rehabilitations of non-electrified railway lines	m	0	216	1.00	1.1	R 0.00
5	Demolition of housing and/or administration facilities	m^2	0	455	1.00	1.1	R 0.00
6	Opencast rehabilitation including final voids and ramps	ha	4	238 697	0.04	1.1	R 44531.34
7	Sealing of shaft, audits and inclines	m^3	0	122	1.00	1.1	R 0.00
8(A)	Rehabilitation of overburden and spoils	ha	0	159 131	1.00	1.1	R 0.00
8(B)	Rehabilitation of processing waste deposits and evaporation ponds (basic, salt-producing waste)	ha	0	198 195	1.00	1.1	R 0.00
8(C)	Rehabilitation of processing waste deposits and evaporation ponds (acidic, metal-rich waste)	ha	0	575 653	0.51	1.1	R 0.00
9	Rehabilitation of subsided areas	ha	0	133 249	1.00	1.1	R 0.00
10	General surface rehabilitation	ha	0.9	126 059	1.00	1.1	R 132 285.78
11	River diversions	ha	0	126 059	1.00	1.1	R 0.00

12	Fencing	m	0	144	1.00	1.1	R 0.00
13	Water Management	ha	0	50 807	0.17	1.1	R 0.00
14	2 to 3 years of maintenance and aftercare	ha	4.9	16 776	1.00	1.1	R 95 844.98
15(A)	Specialists study	Sum	0				R 0.00
15(B)	Specialists study	Sum	0				R 0.00
Sum of items 1 to 15 above							R 272 662.1
Multiply Sum of 1-15 by Weighting factor 2 (Step 4.4)		1.05		R 142 835.00		**Sub Total 1**	R 286 295.21

1	Preliminary and General	6% of Subtotal 1 if Subtotal 1 <R100 000 000.00	R 17 177.71
		12% of Subtotal 1 if Subtotal 1 >R100 000 000.00	-
2	Contingency	10.0% of Subtotal 1	R 28 629.52
		Sub Total 2 (Subtotal 1 plus management and contingency)	R 332 102.44
		Vat (15%)	R 49 815.37
		GRAND TOTAL (Subtotal 3 plus VAT)	**R 381 917.81**

The amount that will be necessary for the rehabilitation of damages caused by the operation, both sudden closures during the normal operation of the project and at final, planned closure gives a sum total of **R 381 917.81**.

(f) Confirm that the financial provision will be provided as determined.

Herewith I, the person, whose name is stated below confirm that I am the person authorised to act as representative of the Applicant in terms of the resolution submitted with the application. I herewith confirm that the company will provide the amount that will be determined by the Regional Manager in accordance with the prescribed guidelines.

Mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon, including

g) Monitoring of Impact Management Actions

h) Monitoring and reporting frequency

i) Responsible persons

j) Time period for implementing impact management actions

k) Mechanisms for monitoring compliance

Table 28: Mechanisms for monitoring compliance with and performance assessment against the EMPR and reporting thereon.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
▪ Demarcation of site with visible beacons	Maintenance of beacons	▪ Visible beacons need to be placed at the corners of the mining area.	Role: ▪ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ▪ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: ▪ Ensure beacons are in place throughout the life of the mine.	Applicable throughout site establishment-, operational-, and decommissioning phases. ▪ Daily compliance monitoring by site management. ▪ Annual compliance monitoring of site by an Environmental Control Officer.
▪ Site establishment	**Visual Characteristics:** ▪ Visual intrusion as a result of site establishment.	▪ Minimize the visual impact of the activity on the surrounding environment through proper site management and implementing good housekeeping practices.	Role: ▪ Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. ▪ Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			Responsibility: • Contain mining to the boundaries of the permitted area. • Ensure that the site have a neat appearance and is kept in good condition at all times. • Limit vegetation removal, and only strip topsoil immediately prior to the use of a specific area. • Rehabilitate and level the site upon closure to ensure that the visual impact on the aesthetic value of the area is kept to a minimum.	
• Site establishment • Crushing, screening, stockpiling and transporting material from site. • Sloping and landscaping upon closure of the mining area.	**Geology and Soil:** • Loss of topsoil and fertility during mining and stockpiling • Loss of stockpiled material due to ineffective storm water control. • Erosion of returned topsoil after rehabilitation .	• Earthmoving equipment to reinstate mined-out areas. • Cover crop to be established on reinstated areas. • Erosion control infrastructure (if necessary)	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Strip and stockpile the upper 300 mm of the soil. • Carefully manage and conserve the topsoil throughout the stockpiling and rehabilitation process. • Ensure topsoil stripping, stockpiling and re-spreading is done in a systematic way. Plan mining in such a way that topsoil is stockpiled for the minimum possible time. • Place topsoil heaps on a levelled area within the mining footprint area. Do not stockpile topsoil in undisturbed areas. • Protect topsoil stockpiles against losses by water and wind erosion. Position stockpiles so as not to be vulnerable to erosion by wind and water. Establishment of plants on the stockpiles will help prevent erosion.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Ensure that topsoil heaps do not exceed 1.5 m in order to preserve micro-organisms within the topsoil, which can be lost due to compaction and lack of oxygen. • Keep temporary stockpiles free of invasive plant species. • Divert storm- and runoff water around the mining area to prevent erosion. • Spread the topsoil evenly over the rehabilitated area, to a depth of 300 mm, upon closure of the site. • Strive to re-instate topsoil at a time of the year when vegetation cover can be established as quickly as possible afterwards, to that erosion of returned topsoil is minimized. The best time of year is at the end of the rainy season. • Plant and irrigate a cover crop immediately after spreading topsoil to stabilise the soil and protect it from erosion. Fertilise the cover crop for optimum biomass production. Rehabilitation extends until the first cover crop is well established. • Monitor the rehabilitated area for erosion, and appropriately stabilize if erosion do occur, for at least 12 months after reinstatement.	
• Site establishment • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	**<u>Groundcover:</u>** • Infestation of the topsoil heaps and mining area with invader plant species. • Infestateion of denuded areas with invader plant species.	• Designated team to cut or pull out invasive plant species that germinated on site. • Herbicide application equipment.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u>	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
	• Infestation of the reinstated area with invader plant species.		• Implement an invasive plant species management plan to control all invasive plant species on site in terms of NEM:BA, 2004 and CARA, 1983. • Keep all stockpiles (topsoil) free of invasive plant species. • Control declared invader or exotic species on the rehabilitated areas.	
• Site establishment. • Mining of aggregate / gravel .	**Fauna:** • Potential impact on fauna within the footprint area. • Disturbance to fauna within the footprint area.	• Toolbox talks to educate employees how to handle fauna that enter the work areas.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Ensure no fauna is caught, killed, harmed, sold or played with. • Instruct workers to report any animals that may be trapped in the working area. • Ensure no snares are set or nests raided for eggs or young. • No activities will be undertaken at any biodiversity of conservation sensitive areas within the proposed site in terms of the Mpumalanga Bioregional Plan.	Applicable throughout site establishment-, and operational phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Site establishment • Screening, stockpile, and transporting material from site.	**Air Quality:** • Dust nuisance as a result of the mining activities.	• Dust suppression equipment such as a water car. • Signage that clearly reduce the speed on the access roads.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility:	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Control the liberation of dust into the surrounding environment by the use of; inter alia, straw, water spraying and/or environmentally friendly dust-allaying agents that contains no PCB's (e.g. DAS products). • Ensure continuous assessment of all dust suppression equipment to confirm its effectiveness in addressing dust suppression. • Limit speed on the haul roads to 40 km/h to prevent the generation of excess dust. • Minimise areas devoid of vegetation. • Flatten and cover loads to prevent spillage and windblown dust during transportation. • Take weather conditions into consideration upon commencement of daily operations. Limit operations during very windy periods to reduce airborne dust and resulting impacts. • Ensure dust generating activities comply with the National Dust Control Regulations, GN No R827 promulgated in terms of NEM:AQA, 2004 and ASTM D1739 (SANS 1137:2012). • Implement best practice measures during the stripping of topsoil, loading, and transporting of material from site to minimize potential dust impacts.	
• Site establishment • Mining of aggregate / gravel • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon	**<u>Noise Ambiance:</u>** • Noise nuisance as a result of the mining activities. • Noise nuisance as a result of the decomissiononig activities.	• Silencers fitted to all project related vehicles, and the use of vehicles that are in road worthy condition in terms of the National Road Traffic Act, 1996.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Ensure that employees and staff conduct themselves in an acceptable manner while on site.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
closure of the mining area.			• No loud music may be permitted at the mining area. • Ensure that all project related vehicles are equipped with silencers and maintained in a road worthy condition in terms of the National Road Traffic Act, 1996. • Implement best practice measures to minimise potential noise impacts. • Contract a qualified occupational hygienist to quarterly monitor and report on the personal noise exposure of the employees working at the mine. Monitoring must be in accordance with SANS 10083:2004 (Edition 5) sampling method as well as NEM:AQA 2004, SANS 10103:2008.	
• Mining of aggregate (dolerite) / gravel . • Screening, stockpile, and transporting material from site. • Sloping and landscaping upon closure of the mining area.	**Waste Management:** • Soil contamination from hydrocarbon spills. • Potential impact assocaited with littering and hydrocarbon spills. • Potential impact associated with litter left at the mining area.	• Oil spill kit. • Sealed drip trays. • Formal waste disposal system with waste registers.	Role: • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. Responsibility: • Ensure regular vehicle maintenance, repairs and services take place in a demarcated service area of the permit holder. If emergency repairs are needed on equipment not able to move to the workshop / service area, drip trays must be present. All waste products must be disposed of in a 200 litre closed container/bin to be removed from the emergency service area to the workshop in order to ensure proper disposal. • Provide ablution facilities in the form of a chemical toilet that is placed outside the 1:100 year floodline of any open water resource.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			Ensure the toilet is serviced at least once every two weeks for the duration of the mining activities. • Ensure that the use of any temporary, chemical toilet facilities does not cause any pollution to water sources or pose a health hazard. In addition, ensure that no form of secondary pollution arise from the disposal of refuse or sewage from the temporary, chemical toilets. Address any pollution problems arising from the above immediately. • Equip the diesel bowser with a drip tray if used on site. The nozzle of the bowser must rest in a sleeve to prevent dripping after refuelling. • Clean drip trays after use. Do not use dirty drip trays. • Keep a spill kit on site. • Collect any effluents containing oil, grease or other industrial substances in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. • Collect the contaminated soil from spillage that occurred, such as oil or diesel leaking from a burst pipe, within the first hour of occurrence, in a suitable receptacle and removed from the site, either for resale or for appropriate disposal at a recognized facility. File proof. • Compile a waste management plan and implement it on site. The plan must focus on the waste hierarchy of the NEM:WA. • Contain general waste in marked, sealable, refuse bins placed at a designated area and remove waste from the mining area to a recognised general waste landfill site. The GSDM waste by laws state that," Waste generated in the Municipality's jurisdiction must	

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			be disposed of at a waste disposal facility licensed to accept such waste or recycled or treated at a licensed waste treatment facility." the third party collecting the waste must be licensed or accredited for waste collection. • Prevent the burning or burying of waste on site. • Report any significant spillage of chemicals, fuels etc. during the lifespan of the mining activities to the Department of Water and Sanitation and other relevant authorities. • Park the machinery at the mining area with drip trays placed underneath stationary vehicles.	
• Mining of aggregate / gravel .	• Potential impact on areas/infrastructure of heritage or cultural concern.	• Contact number of an archaeologist that can be contacted when a discovery is made on site.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Confine all mining to the development footprint area. • Implement the following change find procedure when discoveries are made on site: ▪ If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. ▪ It is the responsibility of the senior on-site Manager to make an initial assessment of the	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			extent of the find, and confirm the extent of the work stoppage in that area. ▪ The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify SAHRA. ▪ Work may only continue once the go-ahead was issued by SAHRA.	
• Crushing, screening, stockpiling and transporting material from site. • Mining of aggregate / gravel .	**<u>Hydrology:</u>** • Storm water management	• Storm water management structures such as berms to direct storm- and runoff water around the stockpiled topsoil area (when needed).	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Divert storm water around the topsoil heaps to prevent erosion. • Conduct activity in terms of the Best Practice Guidelines for small-scale mining as developed by DWS.	Applicable throughout site establishment-, operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.
• Screening, stockpile, and transporting material from site.	**<u>Existing Infrastructure:</u>** • Deterioration of the access road to the mining area. • Overloading of trucks having an impact on the public roads.	• Grader to restore the road surface when needed.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Divert storm water around the access road to prevent erosion.	Applicable throughout operational phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

SOURCE ACTIVITY	IMPACTS REQUIRING MONITORING PROGRAMMES	FUNCTIONAL REQUIREMENTS FOR MONITORING	ROLES AND RESPONSIBILITIES (FOR THE EXECUTION OF THE MONITORING PROGRAMMES)	MONITORING AND REPORTING FREQUENCY AND TIME PERIODS FOR IMPLEMENTING IMPACT MANAGEMENT ACTIONS
			• Restrict vehicular movement to the existing access road to prevent crisscrossing of tracks through undisturbed areas. • Repair rutting and erosion of the access road caused as a direct result of the mining activities. • Prevent the overloading of the truck, and file proof of load weights for auditing purposes.	
• Site establishment. • Mining of aggregate / gravel . • Crushing, screening, stockpiling and transporting material from site. • Sloping and landscaping upon closure of the mining area.	• Potential health and safety risks to employees.	• Stocked first aid box. • Level 1 certified first aider. • All appointments in terms of the Mine Health and Safety Act, 1996.	<u>Role:</u> • Site Manager to ensure day-to-day compliance with the guidelines as stipulated in the EMPR. • Compliance to be monitored by the independent Environmental Control Officer during the annual environmental audit. <u>Responsibility:</u> • Ensure adequate ablution facilities and water for human consumption is daily available on site. • Ensure that workers have access to the correct PPE as required by law. • Manage all operations in compliance with the Mine Health and Safety Act, 1996 (Act No 29 of 1996).	Applicable throughout operational-, and decommissioning phases. • Daily compliance monitoring by site management. • Annual compliance monitoring of site by an Environmental Control Officer.

l) Indicate the frequency of the submission of the performance assessment/environmental audit report.

The Environmental Audit Report in accordance with Appendix 7 as prescribed in Regulation 34 of the EIA Regulations, 2014 (as amended) will annually be submitted to DMRE for compliance monitoring purposes or in accordance with the time period stipulated by the Environmental Authorisation.

m) Environmental Awareness Plan

i) Manner in which the applicant intends to inform his or her employees of any environmental risk which may result from their work.

Once the Applicant received the mining permit and may commence with the proposed activity, a copy of the Environmental Management Programme will be handed to the site manager for his perusal. Issues such as the mining boundaries, fire principals and waste handling will be discussed.

An induction meeting will be held with all the site workers to inform them of the Basic Rules of Conduct with regard to the environment.

ii) Manner in which risk will be dealt with in order to avoid pollution or the degradation of the environment.

The operations manager must ensure that he/she understands the EMPR document and its requirement and commitments before any mining takes place. An Environmental Control Officer needs to check compliance of the mining activity to the management programmes described in the EMPR.

The following list represents the basic steps towards environmental awareness, which all participants in this project must consider whilst carrying out their tasks.

- **Site Management:**
  - Stay within boundaries of site – do not enter adjacent properties.
  - Keep tools and material properly stored.
  - Smoke only in designated areas.
  - Use toilets provided – report full or leaking toilets.

- **Water Management and Erosion:**

  - Check that rainwater flows around work areas and are not contaminated.
  - Report any erosion.
  - Check that dirty water is kept from clean water.

- **Waste Management:**

  - Take care of your own waste
  - Keep waste separate into labelled containers – report full bins.
  - Place waste in containers and always close lid.
  - Don't burn waste.
  - Pick-up any litter laying around.

- **Hazardous Waste Management (Petrol, Oil, Diesel, Grease)**

  - Never mix general waste with hazardous waste.
  - Use only sealed, non-leaking containers.
  - Keep all containers closed and store only in approved areas.
  - Always put drip trays under vehicles and machinery.
  - Empty drip trays after rain.
  - Stop leaks and spills, if safe:
    - ✓ Keep spilled liquids moving away.
    - ✓ Immediately report the spill to the site manager/supervision.
    - ✓ Locate spill kit/supplies and use to clean-up, if safe.
    - ✓ Place spill clean-up wastes in proper containers.
    - ✓ Label containers and move to approved storage area.

- **Discoveries:**

  - Stop work immediately.
  - Notify site manager/supervisor.
  - Includes – archaeological finds, cultural artefacts, contaminated water, pipes, containers, tanks and drums, any buried structures.

- **Air Quality:**

  - Wear protection when working in very dusty areas.
  - Implement dust control measures:
    - ✓ Water all roads and work areas.

- ✓ Minimize handling of material.
- ✓ Obey speed limit and cover trucks.

- **Driving and Noise:**

  - Use only approved access roads.
  - Respect speed limits.
  - Only use turn-around areas – no crisscrossing through undisturbed areas.
  - Avoid unnecessary loud noises.
  - Report or repair noisy vehicles.

- **Vegetation and Animal life:**

  - Do not remove any plants or trees without approval of the site manager.
  - Do not collect fire wood.
  - Do not catch, kill, harm, sell or play with any animal, reptile, bird or amphibian on site.
  - Report any animal trapped in the work area.
  - Do not set snares or raid nests for eggs or young.

- **Fire Management:**

  - Do not light any fires on site, unless contained in a drum at demarcated area.
  - Put cigarette butts in a rubbish bin.
  - Do not smoke near gas, paints or petrol.
  - Know the position of firefighting equipment.
  - Report all fires.
  - Don't burn waste or vegetation.

n) Specific information required by the Competent Authority

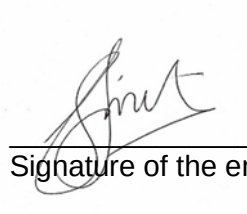
(Among others, confirm that the financial provision will be reviewed annually)

The Applicant undertakes to annually review and update the financial provision calculation, upon which it will be submitted to DMRE for review and approved as being sufficient to cover the environmental liability at the time and for closure of the mine at that time.

2. UNDERTAKING

The EAP herewith confirms

a) the correctness of the information provided in the reports **X**
b) the inclusion of comments and inputs from stakeholders and I&AP's **X**
c) the inclusion of inputs and recommendations from the specialist reports where relevant, and **X**
d) that the information provided by the EAP to interested and affected parties and any response by the EAP to comments or inputs made by interested and affected parties are correctly reflected herein **X**



Signature of the environmental assessment practitioner:

Greenmined Environmental (Pty) Ltd

Name of Company:

28 June 2021

Date:

-END-

APPENDIX A

REGULATION 2(2) MINE MAP

APPENDIX B

LOCALITY MAP

APPENDIX C
SITE ACTIVITIES PLAN

APPENDIX D

LAND USE MAP

APPENDIX E
REHABILITATION MAP

APPENDIX F1 & F2

COMMENTS AND RESPONSE REPORT

&

PROOF OF PUBLIC PARTICIPATION

APPENDIX G

SUPPORTING IMPACT ASSESSMENT

ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, herewith please receive an environmental impact statement that summarises the impact that the proposed activity may have on the environment after the management and mitigation of impacts have been taken into account, with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

ENVIRONMENTAL IMPACT STATEMENT			
SITE ALTERNATIVE 1			
TYPE OF IMPACT	**DURATION**	**LIKELIHOOD**	**SIGNIFICANCE**
Site Establishment: • Visual intrusion as a result of site establishment.	**Duration of site establishment phase (<1 month)**	**Possible**	**Low-Medium Concern**
• Loss of topsoil and fertility during mining and stockpiling		**Low Possibility**	**Low Concern**
• Infestation of the topsoil heaps and mining area with invader plant species.		**Low Possibility**	**Low Concern**
• Potential impact on fauna within the footprint area.		**Low Possibility**	**Low Concern**
• Dust nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
• Noise nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
• Work opportunities to 4 local residents **(Positive Impact)**		**Definite**	**Medium-High (+)**
Mining of aggregate / gravel : • Soil contamination from hydrocarbon spills.	**Duration of operational phase (5 years maximum)**	**LIKELIHOOD** **Low Possibility**	**SIGNIFICANCE** **Low Concern**
• Disturbance to fauna within the footprint area.		**Low Possibility**	**Low Concern**
• Noise nuisance as a result of the mining activities.		**Low Possibility**	**Low Concern**
• Potential impact on areas/infrastructure of heritage or cultural concern.		**Low Possibility** **Low Possibility**	**Low Concern** **Low Concern**
Crushing, screening, stockpiling and transporting material from site: • Loss of stockpiled material due to ineffective storm water control	**Duration of operational phase (5 years maximum)**	**LIKELIHOOD** **Low Possibility** **Low Possibility**	**SIGNIFICANCE** **Low Concern** **Low Concern**

• Dust nuisance as a result of the mining activities. • Noise nuisance as a result of the mining activities. • Potential impact associated with littering and hydrocarbon spills. • Infestation of denuded areas with invader plant species. • Deterioration of the access road to the mining area. • Overloading of trucks having an impact on the public roads.		**Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Possible**	**Low Concern** **Low Concern** **Low Concern** **Low Concern** **Low-Medium Concern**
<u>Sloping and landscaping upon closure of the mining area:</u> • Erosion of returned topsoil after rehabilitation. • Infestation of the reinstated area with invader plant species. • Noise nuisance as a result of the decommissioning activities • Potential impact associated with litter/hydrocarbon spills left at the mining area. • Return of the mining area to agricultural use by the landowner **(Positive Impact)**.	**Duration of decommissioning phase (±2 months)**	**<u>LIKELIHOOD</u>** **Low Possibility** **Low Possibility** **Low Possibility** **Low Possibility** **Definite**	**<u>SIGNIFICANCE</u>** **Low Concern** **Low Concern** **Low Concern** **Low Concern** **Medium-High (+)**

APPENDIX H
FINANCIAL AND TECHNICAL ABILITY

APPENDIX I

INVASIVE PLANT SPECIES MANAGEMENT PLAN

APPENDIX J

PHOTOGRAPHS OF THE PROPOSED SITE

APPENDIX K

CLOSURE / REHABILITATION PLAN

APPENDIX L
CV AND PROOF OF EXPERIENCE OF THE EAP

APPENDIX M

HERITAGE IMPACT ASSESSMENT